THE UNIVERSITY OF WOLLONGONG

CALENDAR 1978

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ARMS OF THE UNIVERSITY

The principal elements incorporated in the arms of the University are the blue of the sea, the gold of the sand and the red of the Illawarra flame tree. The open book often used for educational institutions has also been included.

No motto has yet been chosen.

The blazon is: "Azure an open book proper bound gold on a chief wavy or three cinquefoils gules."

CALENDAR 1978

RECOMMENDED PRICE $1

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UNIVERSITY OF WOLLONGONG
Calendar - University of Wollongong -
Wollongong: Univ. of Wollongong,
1976 -
Annual

Continues: University of Wollongong Handbook
ISSN 0312-0007
378.944

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INFORMATION IN THIS CALENDAR IS CURRENT AT THE TIME OF PRINTING, BUT MAY BE AMENDED WITHOUT NOTICE BY THE UNIVERSITY COUNCIL

PREFACE

The University of Wollongong was incorporated by an Act of the New South Wales Parliament on 30th November, 1972. Eleven years earlier, in 1961, it had begun operation on its present site as Wollongong University College, a College of the University of New South Wales. Parts 1 and 2 of the Act came into effect in 1972. Part 3 was realized when the University was established on 1st January, 1975.

The first years of the new University have seen the completion of Stage II of the Library, the Social Science Building, the Pentagon Lecture Theatre complex, Stage III of the Union, an extension of the Science Building and a Sports Pavilion.

Courses offered at present lead to undergraduate and higher degrees in Arts, Commerce, Education (postgraduate only), Science, Engineering and Metallurgy. Postgraduate diplomas in Accountancy, Education, Mathematics and Philosophy are also offered.

Details of the University's courses, degree requirements and admission and enrolment procedures are provided in this Calendar. Students and intending students are advised to contact the Student Enquiries Office of the University for any further information they may require.

CALENDAR OF DATES

SESSION 1		SESSION 2	
	February 27 to May 14		July 24 to August 27
MAY RECESS	May 15 to May 21	AUGUST RECESS	August 28 to September 3
	May 22 to June 11		September 4 to November 5
STUDY RECESS	June 12 to June 18	STUDY RECESS	November 6 to November 12
EXAMINATIONS	June 19 to July 2	EXAMINATIONS	November 13 to December 3
MID-YEAR RECESS	July 3 to July 23		

January	Monday 2	New Year's Day holiday
	Monday 30	Australia Day holiday
February		
February	Thursday 9, Friday 10	Enrolment of new students
	Monday 20 - Thursday 23	Re-enrolment
	Monday 20	Engineering, Metallurgy
	Tuesday 21	Commerce
	Wednesday 22	Arts A-O
	Thursday 23	Arts P-Z, Science
	Monday 27	Session 1 lectures commence
March	Friday 24	Easter holidays commence
	Monday 27	Easter holidays end
April	Tuesday 25	Anzac Day
May	Monday 15	May recess commences
	Sunday 21	May recess ends
June	Monday 5	Queen's Birthday holiday
	Sunday 11	Session 1 ends
	Monday 12	Study recess commences
	Sunday 18	Study recess ends
	Monday 19	Examinations commence
July	Monday 3	Mid-year recess commences
	Sunday 23	Mid-year recess ends
	Monday 24	Session 2 lectures commence
August	Friday 11	University Day
	Monday 28	August recess commences
September	Sunday 3	August recess ends
October	Monday 2	Eight Hour Day
November	Sunday 5	Session 2 ends
	Monday 6	Study recess commences
	Sunday 12	Study recess ends
	Monday 13	Examinations commence
December	Sunday 3	Examinations end
	Monday 25	Christmas Day
	Tuesday 26	Boxing Day

THE UNIVERSITY OF WOLLONGONG ACT 1972

An Act to provide for the establishment and incorporation of a University at Wollongong; to constitute a Council of the University and define its powers, authorities, duties and functions; to vest certain property in the University; to dissolve the Wollongong University College; to amend the Superannuation Act, 1916, the Local Government Act, 1919, and certain other Acts in certain respects; and for purposes connected therewith. (Assented to, 30th November, 1972.)

BE it enacted by the Queen's Most Excellent Majesty, by and with the advice and consent of the Legislative Council and Legislative Assembly of New South Wales in Parliament assembled, and by the authority of the same, as follows:

PART I.

PRELIMINARY.

Short title and division of Act.

1. *(1)* This Act may be cited as the "University of Wollongong Act, 1972".

(2) This Act is divided as follows:

PART I. -- *PRELIMINARY -- ss. 1-3.*

PART II. -- *VICE-CHANCELLOR DESIGNATE -- ss. 4-7.*

PART III. -- *THE UNIVERSITY OF WOLLONGONG -- ss. 8-41.*

SCHEDULE.

Commencement.

2. *(1)* This section and sections 1 and 3 commence on the date of assent to this Act.

(2) Part II shall commence upon such day as may be appointed by the Governor in respect thereof and as may be notified by proclamation published in the Gazette.

(3) Part III shall commence upon such day as may be appointed by the Governor in respect thereof and as may be notified by proclamation published in the Gazette being a day that is later than the day appointed pursuant to subsection *(2)*.

Interpretation.

3. In this Act, unless the context or subject-matter otherwise indicates or requires --

"by-laws" means by-laws made under this Act;

"Chancellor" means Chancellor of the University;

"College" means Wollongong University College established and maintained by The University of New South Wales under the provisions of the University of New South Wales Act, 1968;

"College Council" means Council of the College;

"Committee" means Selection Committee constituted under Part II;

"Council" means Council of the University;

"Deputy Chancellor" means Deputy Chancellor of the University;

"University" means The University of Wollongong;

"Vice-Chancellor" means Vice-Chancellor of the University.

PART II.

VICE-CHANCELLOR DESIGNATE.

Selection Committee.

4. *(1)* The Minister shall constitute a committee consisting of eight members to hold office until the commencement of Part III of whom --

(a) one shall, by reason of his being the holder of, or a person who was the holder of, the office of Vice-Chancellor of any University in Australia, be appointed by the Minister as Chairman of the Committee;

(b) one shall be appointed by reason of his being the Chairman of the New South Wales Universities Board or a member of that Board nominated by that Chairman to be appointed to the Committee;

(c) two shall be appointed by the Minister; and

(d) four shall be elected members.

(2) The elected members of the Committee shall be qualified as is prescribed by this subsection and shall comprise--

(a) a person who is a professor, and a person who is not a professor, both elected by and from the professors, associate professors, senior lecturers and lecturers of the full-time staff of the College, the Librarian, the Bursar, the Registrar and the Secretary of the College; and

(b) two persons elected by and from the members of the College Council, both being persons who are ineligible for election to the Committee pursuant to paragraph *(a)*.

(3) A casual vacancy occurs in the Committee where --

(a) in the case of the member referred to in subsection *(1) (b)*, that member ceases to be the Chairman of the New South Wales Universities Board, or where the member referred to in subsection *(1) (b)* is a member of the Board nominated by that Chairman, that member ceases to be a member of the Board;

(b) in the case of an elected member, that member ceases to hold the qualification by reason of which he was eligible for election to the Committee;

(c) a member dies;

(d) a member becomes a temporary patient or a continued treatment patient, a protected person or an incapable person within the meaning of the Mental Health Act, 1958, or a person under detention under Part VII of that Act;

(e) a member resigns his membership in writing under his hand addressed to the Minister; or

(f) for any reason the Minister deems fit, a member is removed by the Minister from office as a member of the Committee.

(4) A casual vacancy shall --

(a) in the case of an elected member, be filled by a person qualified and elected in accordance with subsection *(2)*; and

(b) in any other case, be filled by a person qualified in accordance with subsection *(1) (a)*, *(b)* or *(c)* to fill the vacancy concerned.

(5) Meetings of the Committee shall be convened by the Chairman of the Committee.

(6) At any meeting of the Committee --

(a) six members shall form a quorum;

(b) a decision of the majority of the members present at the meeting shall be the decision of the Committee; and

(c) the Chairman, in the event of there being an equality of votes, may give a casting vote.

(7) Any act or proceeding of the Committee is, notwithstanding that at any time when the act or proceeding was done, taken or commenced there was --

(a) a vacancy in the office of the membership of the Committee; or

(b) any defect in the appointment, or any disqualification, of a member of the Committee,

as valid as if the vacancy, defect or disqualification did not exist and the Committee were fully and properly constituted.

(8) Any election for the purpose of electing the elected members of the Committee shall be conducted by the Registrar of The University of New South Wales at such time or times and in such manner as that Registrar deems fit.

Powers, duties and functions of Committee.

5. The Committee shall be charged with the power to select a person to be the Vice-Chancellor designate of the University and for that purpose shall --

(a) at a meeting convened as soon as practicable whenever the Minister notifies the Chairman that there is a vacancy in the office of Vice-Chancellor designate of the University, arrange to call for applications for that office to be made on or before a stated day;

(b) meet as soon as practicable after that stated day with a view to selecting a person to be the holder of that office;

(c) determine in consultation with the Council of The University of New South Wales and the College Council or, where either Council has appointed persons to be its representatives for the purpose, those persons, the terms upon which and conditions subject to which a person may, pursuant to section 6, continue or be appointed as a member of the full-time staff of the College and take office under section 20(1) as Vice-Chancellor; and

(d) where a person is selected for appointment to that office, recommend the appointment to the Council of The University of New South Wales.

Appointment of Vice-Chancellor designate.

6. (1) Subject to subsection (2) the Council of The University of New South Wales shall, upon such terms and conditions as are determined pursuant to section 5 (c), appoint the person recommended by the Committee pursuant to section 5 (d) as the Vice-Chancellor designate of the University who shall be a member of the full-time staff of the College.

(2) Notwithstanding the terms and conditions determined pursuant to section 5 (c), where the person appointed under subsection (1) is, at the time of his appointment, a member of the full-time staff of The University of New South Wales, he shall not be appointed to the office of Vice-Chancellor designate of the University upon terms and conditions less favourable than those upon which he was employed immediately before that appointment.

Reference of certain matters to Minister.

7. (1) Where the Committee is unable to determine any matter the Chairman shall refer the matter to the Minister for resolution.

(2) Any decision of the Minister in respect of any matter referred to him under this section shall be as final and binding as if the decision were made by the Committee.

PART III.

THE UNIVERSITY OF WOLLONGONG

Establishment of University.

8. A University, consisting of --

(a) a Council;

(b) Convocation;

(c) the professors and such other classes of persons giving instruction within the University as may be prescribed by the by-laws and such superior officers within the University as may be so prescribed; and

(d) the graduates and students of the University,

is hereby established at Wollongong in the State of New South Wales.

Incorporation of University.

9. (1) The University is a body corporate under the name of "The University of Wollongong".

(2) The common seal of the University shall be kept in such custody as the Council may direct and shall not be used except by resolution of the Council.

Functions of the University.

10. The functions of the University shall, within the limits of its resources and subject to this Act and the by-laws, include --

(a) the provision at Wollongong or elsewhere of educational facilities at university standard for any persons enrolled therein;

(b) the dissemination and increase of knowledge and the promotion of scholarship; and

(c) the conferring and awarding of degrees and diplomas.

Facilities to be provided for students.

11. The University may, for the purpose of discharging its functions, provide from time to time such facilities for its students as it deems desirable.

The Council.

12. (1) There shall be a Council of the University which, subject to subsection (3), shall have and may exercise and discharge the powers, authorities, duties and functions conferred and imposed upon the Council by or under this Act.

(2) The Council shall be the governing authority of the University.

(3) The provisions of sections 17, 18 and 19 do not apply to and in respect of the Council constituted under section 14.

Committees.

13. *(1)* The Council may be resolution appoint such committees as it thinks fit to assist and advise it in the carrying out of its functions and the exercise of its powers under this Act.

(2) A committee appointed under subsection *(1)* shall have, and may exercise and discharge, such powers, authorities, duties and functions as the Council may determine.

Constitution of first Council.

14. *(1)* The first Council shall consist of --

(a) the persons who immediately before the commencement of this Part held office as members of the College Council other than such members of that Council as, at that commencement, are members of the full-time staff of The University of New South Wales; and

(b) the person who, immediately before that commencement, held office, pursuant to section 6, as Vice-Chancellor designate of the University, unless he becomes a member of the Council pursuant to paragraph *(a)*.

(2) The members of the first Council shall, subject to this Act, hold office until the Council duly constituted under section 15 assumes office.

(3) Where a casual vacancy occurs in the office of any member of the first Council the Governor may appoint a person to the vacant office and the person so appointed shall hold office for the residue of his predecessor's term of office.

(4) The first meeting of the first Council shall be convened by the Vice-Chancellor who shall preside until a Chairman is elected pursuant to subsection *(6)*.

(5) At any meeting of the first Council one-half (or where one-half is not a whole number the whole number next higher than one-half) of the total number of members for the time being of that Council, shall form a quorum.

(6) The members of the first Council shall, at their first meeting, elect from among their number a Chairman and Vice-Chairman.

(7) Subject to subsection *(4)*, at every meeting of the first Council the Chairman or, if he is not present, the Vice-Chairman shall preside, but if both the Chairman and Vice-Chairman are not present, the members present shall elect a person from among their number to preside as Chairman.

(8) The first Council shall take all steps necessary to ensure so far as possible that a Council is duly constituted under section 15 so as to take office within six months after the commencement of this Part or within such extended time as the Governor may, by proclamation published in the Gazette at any time during that period of six months, specify.

Constitution of Council other than first Council.

15. *(1)* The Council, other than the first Council --

(a) shall be constituted in accordance with this section; and

(b) shall assume office upon such day as the Governor may appoint in that behalf and notify by proclamation published in the Gazette.

(2) The Council shall consist of --

(a) parliamentary members;

(b) official members;

(c) nominated members; and

(d) elected student and non-student members.

(3) The parliamentary members of the Council shall be --

(a) a member of the Legislative Council elected by that Council --

(i) as soon as practicable after the commencement of this Part and thereafter as soon as practicable after the commencement of the term of service of the members of that Council elected as required by section 17F (5) of the Constitution Act, 1902; or

(ii) where there is a casual vacancy in the office of a parliamentary member of the Council held pursuant to subparagraph (i), as soon as practicable after that office becomes vacant; and

(b) a member of the Legislative Assembly elected by that Assembly --

(i) as soon as practicable after the commencement of this Part and thereafter as soon as practicable after each general election of members of the Legislative Assembly; or

(ii) where there is a casual vacancy in an office of a parliamentary member of the Council held pursuant to subparagraph (i), as soon as practicable after that office becomes vacant.

(4) The official members of the Council shall be --

(a) the person for the time being holding the office of Chancellor, where he is not otherwise a member of the Council; and

(b) the person for the time being holding the office of Vice-Chancellor.

(5) The nominated members shall comprise four persons appointed by the Governor on the nomination of the Minister.

(6) The elected student members of the Council shall comprise two persons who are qualified and elected in each case as may be prescribed by the by-laws by and from persons who are enrolled as candidates proceeding to a degree or diploma in the University (other than persons so enrolled who are members of the full-time staff of the University).

(7) The elected non-student members of the Council shall be qualified and elected in each case or for each class as may be prescribed by this subsection and the by-laws and shall comprise --

(a) three persons, none of whom shall be a member of the full-time staff of the University, so elected by such of the members of Convocation as are included in a list prepared for the purposes of this subsection in accordance with the by-laws;

(b) four persons, of whom one shall not be, and each of the others shall be, a professor within the University, so elected by and from the professors and such other persons, being persons giving instruction within the University and superior officers within the University, as may be prescribed by the by-laws;

(c) one person, being a member of the staff of the University ineligible for election pursuant to paragraph *(b)*, so elected by and from such members of the staff of the University as may be prescribed by the by-laws; and

(d) three persons so elected by the members of the Council for the time being referred to in subsections *(3)*, *(4)*, *(5)*, *(6)* and paragraphs *(a)*, *(b)* and *(c)*.

(8) Where a person (not being a person who is a member of the Council) is appointed at any time by the Council to act in the place of the Vice-Chancellor, that person shall, while so acting, be deemed to be an official member of the Council.

(9) Subject to this Act, a member of the Council shall hold office --

(a) in the case of a parliamentary member, until a member of the House of Parliament that elected him is elected by that House to replace him;

(b) in the case of an official member, while he holds the office by virtue of which he is such a member;

(c) in the case of a nominated member, for such term not exceeding three years as may be prescribed by the by-laws; and

(d) in the case of an elected member, for such term not exceeding three years as may be prescribed by the by-laws.

(10) A retiring member of the Council shall not, by reason of that membership, be disqualified from again becoming a member of the Council.

(11) A casual vacancy shall --

(a) in the case of a nominated member, be filled by such person as the Governor may appoint; and

(b) in the case of an elected member, be filled by a person qualified in accordance with subsection *(6)* or *(7)* to be elected to the vacancy concerned in such manner as may be prescribed by the by-laws,

and any member filling a casual vacancy under this subsection shall hold office for the residue of his predecessor's term of office.

(12) A by-law for the purposes of subsection *(6)* or *(7)* may be made with respect to --

(a) all persons of a specified class; or

(b) all persons of a specified class other than persons of a specified class or classes.

(13) A by-law for the purposes of subsection *(9) (c)* and *(d)* may --

(a) prescribe a term of office by reference to determined, or determinable, days of commencement and termination;

(b) prescribe different terms of office in respect of the nominated members or the different classes of elected members; and

(c) provide for the retirement in rotation of the nominated members or the different classes of elected members.

Vacation of office.

16. A member of the Council shall be deemed to have vacated his office if he --

(a) dies;

(b) in the case of a nominated or elected member, transfers his place of permanent residence to a place that is not within the State or the Australian Capital Territory;

(c) declines to act;

(d) resigns his office by writing under his hand addressed --

(i) in the case of the parliamentary member who is a member of the Legislative Council, to the President of the Legislative Council;

(ii) in the case of the parliamentary member who is a member of the Legislative Assembly, to the Speaker of the Legislative Assembly;

(iii) in the case of a nominated member, to the Minister; or

(iv) in the case of an elected member, to the Vice-Chancellor;

(e) is a nominated or elected member who becomes bankrupt, applies to take the benefit of any law for the relief of bankrupt or insolvent debtors, compounds with his creditors or makes any assignment of his estate for their benefit;

(f) is a nominated or elected member who becomes a temporary patient or a continued treatment patient, a protected person or an incapable person within the meaning of the Mental Health Act, 1958, or a person under detention under Part VII of that Act;

(g) is a nominated member or elected member and absents himself from four consecutive meetings of the Council without leave of the Council;

(h) ceases, in the case of the parliamentary member elected by the Legislative Council, to be a member of the Legislative Council;

(i) ceases, in the case of the parliamentary member elected by the Legislative Assembly --

(i) to be a member of that Assembly otherwise than by reason of its dissolution or its expiration by effluxion of time; or

(ii) to be a member of that Assembly by reason of its dissolution or its expiration by effluxion of time and is not re-elected as a member of that Assembly at the next general election of members of that Assembly; or

(j) being an elected member referred to in section 15 *(7) (b)* or *(c)*, ceases to be an employee of the University.

Election of Chancellor.

17. *(1)* The Council shall, at its first meeting and whenever a vacancy in the office of Chancellor occurs, elect a person (whether a member of the Council or not) to be Chancellor of the University.

(2) The Chancellor shall hold office for such period not exceeding three years and on such terms and conditions as may be prescribed by the by-laws.

Deputy Chancellor.

18. *(1)* The Council shall, at its first meeting and whenever a vacancy in the office of Deputy Chancellor occurs, elect one of its members to be Deputy Chancellor of the University.

(2) The Deputy Chancellor shall, unless he sooner ceases to be a

member of the Council, hold office for one year from the date of his election and on such conditions as may be prescribed by the by-laws.

(3) In the absence of the Chancellor or during a vacancy in the office of Chancellor or during the inability of the Chancellor to act, the Deputy Chancellor shall have and may exercise and discharge all the powers, authorities, duties and functions of the Chancellor.

Chairman.

19. *(1)* The Chancellor shall preside at all meetings of the Council and all committees constituted by the Council at which he is present.

(2) At any meeting of the Council or of a committee constituted by the Council at which the Chancellor is not present, the Deputy Chancellor shall preside, and in the absence of both the Chancellor and the Deputy Chancellor, a member elected by the members present from among their number, shall preside.

Appointment of Vice-Chancellor.

20. *(1)* The first Vice-Chancellor of the University shall be the person who, immediately before the commencement of this Part, was the member of the full-time staff of the College holding office as Vice-Chancellor designate pursuant to section 6 *(1)* and he shall, subject to this section, continue in office under the terms and conditions determined under section 5 *(c)* in relation to his tenure of the office of Vice-Chancellor.

(2) Whenever a vacancy occurs in the office of Vice-Chancellor, the Council shall appoint a person, whether a member of the Council or not, to be Vice-Chancellor.

(3) The Vice-Chancellor (other than the first Vice-Chancellor) shall hold office for such period and on such terms and conditions as the Council determines.

(4) The Vice-Chancellor shall be the chief executive officer of the University and shall have and may exercise and discharge such powers, authorities, duties and functions as may be prescribed by the by-laws and, subject to the by-laws, as the Council determines.

Quorum.

21. At any meeting of the Council one-half (or where one-half is not a whole number the whole number next higher than one-half) of the total number of members for the time being of the Council, shall form a quorum.

Re-appointment or re-election.

22. Nothing contained in this Act shall prevent any person from being immediately, or at any time, re-appointed or re-elected to any office or place under this Act if he is eligible and otherwise qualified, for the time being, to hold that office or place.

Validity of acts and proceedings.

23. *(1)* No act or proceeding of the Council or any committee of the Council, or of the Vice-Chancellor or any other person acting pursuant to any direction of the Council, shall be invalidated or prejudiced by reason only of the fact that at the time when such act or proceeding was done, taken or commenced there was a vacancy or a number of vacancies in the office or offices of any member or members of the Council.

(2) All acts and proceedings of the Council or any committee of the Council, or of the Vice-Chancellor or any other person acting pursuant to any direction of the Council, shall notwithstanding the subsequent discovery of any defect in the appointment or election of any member of the Council or that any such member was disqualified from acting as or incapable of being a member of the Council, be as valid as if that member had been duly appointed or elected and was qualified to act as or capable of being a member and had acted as a member of the Council and as if the Council had been properly and fully constituted.

Public Service Act not to apply.

24. The provisions of the Public Service Act, 1902, do not apply to and in respect of the appointment of any member of the Council, and a member shall not, as such a member, be subject to the provisions of that Act.

Powers of Council.

25. *(1)* Subject to this Act and the by-laws, the Council --

(a) may provide such courses as it deems fit and in conferring and awarding degrees and diplomas issue such certificates in the nature of degrees, diplomas or otherwise as it thinks fit;

(b) may appoint and terminate the appointment of academic and other staff of the University;

(c) shall have the control and management of the affairs and concerns of the University and may act in all matters concerning the University in such manner as appears to it best calculated to promote the objects and interests of the University;

(d) may acquire by gift, bequest or devise any property for the purposes of this Act and may agree to carry out the conditions of any such gift, bequest or devise;

(e) may borrow money for the purpose of carrying out and performing any of its powers, authorities, duties and functions, for the renewal of loans or the discharge or partial discharge of any indebtedness to the Treasurer or to any bank within such limits, to such extent and upon such conditions as to security or otherwise as the Governor upon the recommendation of the Treasurer may approve;

(f) may invest any funds belonging to or vested in the University in any manner for the time being authorised for the investment of trust funds or in any manner approved by the Governor, generally or in any particular case or class of cases, upon the recommendation of the Treasurer; and

(g) shall have the control and management of all real and personal property at any time vested in or acquired by the University, and may, subject to subsection *(2)*, dispose of real or personal property in the name and on behalf of the University.

(2) Except as provided in subsection *(3)* the Council shall not, except with the approval of the Governor, alienate, mortgage, charge or demise any lands of the University.

(3) The Council may, without the approval of the Governor, lease any lands of the University where --

(a) the term of the lease does not exceed twenty-one years; and

(b) subject to subsection *(4) (b)*, there is reserved for the whole of the term, the highest rent that can reasonably be obtained without fine.

(4) In the case of a lease of any lands of the University or any renewal thereof to a residential college affiliated with the University, the lease shall --

(a) be for a term not exceeding ninety-nine years;

(b) be at a nominal rent; and

(c) contain such other conditions as the University deems fit including a condition that the lease shall not be assigned.

(5) The rule of law against remoteness of vesting does not apply to and in respect of any condition of a gift, bequest or devise to which the University has agreed.

Delegation by Council.

26. *(1)* The Council may, in relation to any matter or class of matters, or in relation to any activity or function of the University, by resolution, delegate all or any of its powers, authorities, duties and functions under this Act (except this power of delegation) to any member or to any committee of its members, or to any officer or officers of the University.

(2) Every delegation under this section shall be revocable by resolution of the Council, and no delegation shall prevent the exercise of any power, authority, duty or function by the Council.

By-laws.

27. *(1)* The Council may make by-laws, not inconsistent with this Act, with respect to all matters pertaining to the University.

(2) Without prejudice to the generality of subsection *(1)* the Council may make by-laws for or with respect to --

(a) the management, good government, and discipline of the University;

(b) the method of election of members of the Council (other than the parliamentary members who are to be elected);

(c) the manner and time of convening, holding and adjourning the meetings of the Council and the manner of voting at such meetings, including postal voting or voting by proxy; the powers and duties of the Chairman thereof; the conduct and record of the business; the appointment of committees of the Council, and the quorum, powers and duties of such committees;

(d) the number, stipend, manner of appointment and dismissal of deans, professors, lecturers, examiners and other officers and employees of the University;

(e) the entrance standards for students;

(f) the fees and charges to be paid including fees and charges for entrance, tuition, lectures, residence and conferring of degrees and diplomas, and the exemption from, or deferment of, payment of fees and charges;

(g) the course of lectures or studies for, the examinations for, and the granting of, degrees, diplomas, certificates and honours and the attendance of candidates therefor;

(h) the examinations for, and the granting of, fellowships, scholarships, exhibitions, bursaries and prizes;

(i) the admission of students of other universities and institutions of higher education to any status within the University or the granting to graduates of such universities or institutions, or other persons, of a degree or diploma without examination;

(j) the establishment of residential colleges and halls of residence within the University and their conduct or the affiliation of residential colleges;

(k) the affiliation with the University of any educational or research establishment;

(l) the provision of a scheme of superannuation for the professors of the University; and

(m) the form and use of academic costume.

(3) Every by-law made by the Council shall be sealed with the common seal of the University and shall be submitted for the approval of the Governor.

Regulations, rules or orders.

28. (1) The by-laws may provide for empowering any authority (including the Council) or officer of the University to make regulations, rules or orders (not inconsistent with this Act or with any by-law) for regulating, or providing for the regulation of, any specified matter (being a matter with respect to which by-laws may be made) or for carrying out or giving effect to the by-laws.

(2) Any regulation, rule or order referred to in subsection (1) --

(a) shall have the same force and effect as a by-law;

(b) may, from time to time as the occasion requires, be amended or repealed by any authority (including the Council) or officer of the University empowered by subsection (1) to make such a regulation, rule or order; and

(c) shall be deemed not to be within the meaning of the term "regulation" as defined in section 41 of the Interpretation Act, 1897.

Convocation.

29. (1) Convocation shall consist of --

(a) all members and past members of the Council;

(b) all graduates of the University;

(c) all members of the full-time academic staff of the University and such other members or classes of members of the staff of the University as the by-laws may prescribe;

(d) such graduates of other universities, or other persons, as are, in accordance with the by-laws, admitted as members of Convocation; and

(e) without prejudice to the generality of paragraph (d), graduates of The University of New South Wales who spent at least three years as properly enrolled students of the College.

(2) The first meeting of Convocation shall be convened by the Vice-Chancellor.

(3) Meetings of Convocation shall be convened and the business at such meetings shall, subject to the by-laws, be as determined by Convocation.

(4) A quorum at any meeting of Convocation shall be such number of members as may be prescribed by the by-laws.

(5) Convocation shall have and may exercise and discharge such powers, authorities, duties and functions as may be prescribed by the by-laws.

(6) The Council may establish a Standing Committee and such other committees of Convocation as it considers necessary.

Treasurer to meet certain costs.

30. *(1)* There shall be paid to the University in respect of the year commencing upon the first day of January of the year of commencement of this Part and in respect of each succeeding year, such sum as the Treasurer may, upon taking into consideration the University's estimated expenditure requirements and income from all sources which is capable of being applied towards meeting such expenditure requirements, determine.

(2) To enable the Treasurer to exercise and perform the powers and functions conferred upon him by subsection *(1)* the University shall, in respect of the year commencing upon the first day of January that next preceded the commencement of this Part, as soon as practicable after that commencement, and in respect of each succeeding year either before or as soon as practicable after its commencement, submit to the Treasurer estimates of the expenditure and income of the University for that year and such other information as the Treasurer may deem necessary.

(3) Any moneys payable by the Treasurer under this section shall be paid out of moneys provided by Parliament.

Advance by Treasurer.

31. The Treasurer may for the temporary accommodation of the University advance such moneys to the Council as the Governor may approve upon such terms and conditions as to repayment and interest as may be agreed upon.

Accounts to be rendered.

32. The Council shall cause to be kept proper books of account in relation to the funds of the University and shall, as soon as practicable after the thirty-first day of December in each year, prepare and transmit to the Minister for presentation to Parliament a statement of accounts in a form approved by the Auditor-General exhibiting a true and correct view of the financial position and transactions of the University for the year.

Audit.

33. *(1)* The accounts of the University shall be audited by the Auditor-General who shall, in respect thereof, have all the powers conferred on the Auditor-General by any law for the time being in force relating to the audit of public accounts.

(2) The provisions of the Audit Act, 1902, apply to and in respect of the members of the Council and to the officers and employees of the University in the same manner as they apply to accounting officers of public departments.

Report of proceedings.

34. *(1)* As soon as practicable after the first day of January in each year, the Council shall prepare and furnish to the Minister a report upon the proceedings of the University during the period of twelve months immediately preceding that day including a summary of the work, researches and investigations carried out by the University during that period.

(2) A copy of each report under subsection *(1)* shall be laid before both Houses of Parliament as soon as practicable after it has been received by the Minister.

No religious test or political discrimination.

35. A person shall not, by reason of his religious or political views or beliefs, be denied admission as a student of the University or be ineligible to hold office therein or to graduate thereat or to enjoy any benefit, advantage or privilege thereof.

Visitor.

36. The Governor of New South Wales shall be the Visitor of the University with full authority and jurisdiction to do all such things and entertain such causes as may pertain to or be exercised by visitors as often as he thinks fit.

Teachers' college students and school teachers.

37. *(1)* The Council shall allow such persons as are --

(a) students of teachers' colleges established under the Public Instruction Act of 1880, teachers in schools established under that Act or members of the Public Service of New South Wales approved by the Minister;

(b) qualified in such manner as may be prescribed by the by-laws to be enrolled as students of the University;

(c) selected by the University for admission to the University; and

(d) not otherwise excluded from the University,

to attend University lectures for the purpose of proceeding to a first degree and to receive tuition for the period required for admission to that degree without payment of lecture, class or tuition fees.

(2) Nothing in subsection *(1)* shall exempt any person referred to in

that subsection from the payment of such fees, other than lecture, class or tuition fees, as may be approved by the Council.

Provisions relating to Wollongong University College.

38. *(1)* The College is hereby dissolved.

(2) All real and personal property which immediately before the commencement of this Part was held by or was vested in The University of New South Wales or any other body in trust for, or on behalf of, the College shall, by virtue of this Act, be divested from The University of New South Wales or such other body and shall vest in the University to be applied by the University, subject to any trusts or conditions on which it was held immediately before that commencement, for the objects and purposes for which the University is established.

Transfer by University of New South Wales of certain property to University.

39. *(1)* This section applies to and in respect of real and personal property, including real and personal property vested in the University pursuant to section 38 *(2)*, which immediately before the commencement of this Part was held by or was vested in The University of New South Wales and used by that University for the purposes of the College.

(2) The Minister shall cause to be constituted a Joint Committee consisting of five members of whom --

(a) one shall be the Auditor-General, or such person as he may nominate, who shall be Chairman and who shall convene, and preside at, all meetings of that Committee;

(b) two shall be such persons as are selected by the Council of The University of New South Wales to be representatives of that University; and

(c) two shall be such persons as are selected by the Council to be representatives of the University.

(3) The function of the Joint Committee is to determine as soon as practicable --

(a) what property to which this section applies (other than property vested pursuant to section 38) is to be transferred to the University;

(b) what debts and liabilities in respect of property to which this section applies are to be transferred to the University;

(c) the manner in which payments on account of leave or upon the retirement or death of a member of the staff of The University of New South Wales who is transferred to the University pursuant to this Act are to be met and the extent to which those payments should be apportioned between The University of New South Wales and the University;

(d) what books, documents, records and papers are to be handed over to the University; and

(e) such other matters relating to the matters referred to in paragraphs *(a)*, *(b)*, *(c)* and *(d)* as that committee deems necessary or expedient.

(4) Where a difference of opinion arises between the members of the Joint Committee representing The University of New South Wales and the University in respect of a determination of any of the matters referred to in subsection *(3)* the matter shall be determined in such manner as the Auditor-General or the person nominated by him to represent him on that Committee directs.

(5) Any determination made by the Joint Committee pursuant to subsection *(3)* shall have effect according to its tenor.

(6) The Chairman of the Joint Committee shall forward or cause to be forwarded to the Minister, The University of New South Wales and the University written notice of any determination it may make with respect to the matters referred to in subsection *(3)* and each University shall keep a record of that notice.

(7) Upon the receipt of a notice of any determination made by the Joint Committee, The University of New South Wales shall, as soon as practicable, thereafter give effect to the determination.

Persons holding office in the College.

40. *(1)* In this section a reference to an "officer of the College" is a reference to a person who, immediately before the commencement of this Part, held any salaried office or employment at the College otherwise than as --

(a) a part-time lecturer, tutor or demonstrator;

(b) a temporary senior lecturer, lecturer, senior tutor, tutor, senior demonstrator or demonstrator; or

(c) a staff member employed on a fixed term contract.

(2) Every officer of the College shall become, at the commencement of this Part, an officer and an employee of the University on such terms and conditions (including terms and conditions as to remuneration and duration of appointment), not less favourable than those upon which he was employed at the College immediately before that commencement, as the Council determines.

(3) The Council may, in determining terms and conditions in respect of the title, duties or status attaching to offices or employment at the University, determine in relation to an officer of the College terms and conditions less favourable than those on which the officer of the College was employed immediately before the commencement of this Part.

(4) An officer of the College shall not have any right to damages or compensation in respect of the termination, in consequence of the commencement of this Part, of his tenure of any office or employment at the College but he shall be entitled to enforce or enjoy any right or privilege to which he was, by virtue of section 2 of the University of New South Wales Act, 1968, entitled immediately before that commencement as if the right or privilege had been conferred by this Act.

Amendments.

41. An Act specified in the first column of the Schedule is amended to the extent specified opposite that Act in the second column of the Schedule.

SCHEDULE.

Sec. 41.

First Column.		Second Column.
Year and No. of Act.	Short title.	Extent of amendment.
1916, No. 28.	Superannuation Act, 1916.	Insert in the definition of "Employee" in section 3(1) after the words "University of New South Wales," the words "or, subject to subsection (5), a professor of The University of Wollongong,". Insert next after section 3(4) the following new subsection: (5) (a) Subject to this subsection the exclusion from the definition of "Employee" of a professor of The University of Wollongong shall not extend to a person whose rights as a contributor are continued by section 40 of the University of Wollongong Act, 1972. (b) A professor of The University of Wollongong shall cease to be a contributor if, after the commencement of Part III of the University of Wollongong Act, 1972, he becomes, or continues to be, party to any scheme or arrangement to which that University is also a party and under which he is or may become entitled to any pension or annuity or retiring allowance upon retirement from his professorship. (c) The provisions of subsection (3) shall apply, mutatis mutandis, to professors of The University of Wollongong other than those who are employees by virtue of paragraph (a). Insert at the end of Schedule III the following words: The University of Wollongong.
1919, No. 41	Local Government Act, 1919.	Insert next after section 132 (1) (fiv) the following new paragraph:

SCHEDULE. (CONT'D)

Sec. 41.

First Column.		Second Column.
Year and No. of Act.	Short title.	Extent of amendment.
		(fv) land which is vested in The University of Wollongong or in a college thereof and is used or occupied by the University or college, as the case may be, solely for the purposes thereof; and
1924, No. 50.	Metropolitan Water, Sewerage, and Drainage Act, 1924.	Insert next after section 88 (1) (f2) the following new paragraph: (f3) land which is vested in The University of Wollongong or in a college thereof and is used or occupied by the University or college, as the case may be, solely for the purposes thereof.

THE BY-LAW

The University of Wollongong hereby makes the following By-law:

PART I.

PRELIMINARY.

1. This By-law may be cited as the "University of Wollongong By-law".

2. This By-law is divided into Parts as follows:

PART I. -- *PRELIMINARY.*

PART II. -- *ELECTION OF MEMBERS OF THE COUNCIL.*

SCHEDULE.

3. *(1)* In this By-law, unless a contrary intention appears --

"academic staff member" means a member of the Council elected under section 15 *(7) (b)* of the Act;

"Act" means the University of Wollongong Act, 1972;

"Convocation member" means a member of the Council elected under section 15 *(7) (a)* of the Act;

"Council" means Council of the University;

"general staff member" means the member of the Council elected under section 15 *(7) (c)* of the Act;

"student member" means a member of the Council elected under section 15 *(6)* of the Act;

"University" means The University of Wollongong.

(2) In this By-law, unless a contrary intention appears, a reference to an authority, officer or office shall be construed as a reference to that authority, officer or office in and of the University.

PART II.

ELECTION OF MEMBERS OF THE COUNCIL.

4. *(1)* For the purposes of section 15 *(6)* of the Act the student members shall comprise two persons who are qualified and elected in accordance with this clause.

(2) The Returning Officer shall keep a roll (in this By-law referred to as the Roll of Students) containing the names and last known addresses of persons who are enrolled as candidates proceeding to a degree or diploma in the University (other than persons so enrolled who are members of the full-time staff of the University).

(3) The persons qualified to be elected are those persons whose names appear on the Roll of Students at the date and time prescribed pursuant to paragraph 8 of the Schedule for the close of nominations.

(4) The persons entitled to vote are those persons whose names appear on the Roll of Students at the date and time prescribed pursuant to paragraph 15 of the Schedule for the receipt of completed voting papers.

(5) The provisions of the Schedule apply to an election conducted under this clause.

5. *(1)* For the purposes of section 15 *(7) (a)* of the Act the Convocation members shall comprise three persons who are qualified and elected in accordance with this clause.

(2) The Returning Officer shall keep a list for the purposes of section 15 *(7) (a)* of the Act (in this By-law referred to as the Roll of Convocation) containing the names and last known addresses of the members of Convocation.

(3) The persons qualified to be elected are persons other than full-time members of the staff of the University.

(4) The persons entitled to vote are those persons whose names appear on the Roll of Convocation at the date and time prescribed pursuant to paragraph 15 of the Schedule for the receipt of completed voting papers.

(5) The provisions of the Schedule apply to an election conducted under this clause.

6. *(1)* For the purposes of section 15 *(7) (b)* of the Act the academic staff members shall comprise four persons who are qualified and elected in accordance with this clause.

(2) The Returning Officer shall keep a roll (in this By-law referred to as the Roll of Academic Staff) containing the names and last known addresses of --

(a) professors within the University;

(b) persons holding the positions of associate professor, reader, senior lecturer, lecturer, senior tutor, senior demonstrator, tutor, demonstrator, tutor/demonstrator and teaching fellow within the University and such other positions within the University as may be specified in regulations made by the Council for the purposes of this paragraph; and

(c) officers holding the positions of Registrar, Bursar, University Librarian and Estate Manager within the University and such other positions within the University as may be specified in regulations made by the Council for the purposes of this paragraph.

(3) Subject to section 15 *(7) (b)* of the Act, the persons qualified to be elected are those persons whose names appear on the Roll of Academic Staff at the date and time prescribed pursuant to paragraph 8 of the Schedule for the close of nominations.

(4) The persons entitled to vote are those persons whose names appear on the Roll of Academic Staff at the date and time prescribed pursuant to paragraph 15 of the Schedule for the receipt of completed voting papers.

(5) The provisions of the Schedule apply to an election under this clause.

7. *(1)* For the purposes of section 15 *(7) (c)* of the Act the general staff member shall comprise a person who is qualified and elected in accordance with this clause.

(2) The Returning Officer shall keep a roll (in this By-law referred to as the Roll of General Staff) containing the names and last known addresses of the full-time staff of the University who are ineligible for election pursuant to section 15 *(7) (b)* of the Act.

(3) The persons qualified to be elected are those persons whose names appear on the Roll of General Staff at the date and time prescribed pursuant to paragraph 8 of the Schedule for the close of nominations.

(4) The persons entitled to vote are those persons whose names appear on the Roll of General Staff at the date and time prescribed pursuant to paragraph 15 of the Schedule for the receipt of completed voting papers.

(5) The provisions of the Schedule apply to an election conducted under this clause.

8. *(1)* For the purposes of section 15 *(7) (d)* of the Act the members elected by the Council shall comprise three persons elected in accordance with this clause.

(2) The election shall be held at a meeting convened by the Returning Officer of those members of the Council who are entitled, pursuant to section 15 *(7) (d)* of the Act, to vote.

(3) The Returning Officer shall post or deliver to each such member at least ten days before the day of the meeting a notice that the election is to be held.

(4) The notice of election referred to in paragraph *(3)* shall state --

(a) the number of members to be elected; and

(b) the date, time and place of the meeting.

(5) The election shall be effected in such manner as may be determined at the meeting.

9. *(1)* For the purposes of section 15 *(11) (b)* of the Act the prescribed manner for filling a casual vacancy is, subject to subclause *(2)*, the same manner as that in which the person whose seat is vacant was elected.

(2) In the event of a casual vacancy in the office of any member of the Council (other than a member elected under section 15 *(7) (d)* of the Act) occurring within less than one year of the date on which the member's term of office would have expired, such vacancy shall be filled by some person qualified to hold that office appointed by the Council in the place of that member.

10. *(1)* An election conducted under this Part shall not be invalid by reason only of the omission of the name of a person who is qualified to be elected or eligible to vote at that election from the Roll of Students, Roll of Convocation, Roll of Academic Staff or Roll of General Staff, as the case may be.

(2) A person who is entitled to be enrolled on a roll or list kept under this Part may inspect that roll or list during the time that the office of the Registrar is open.

11. *(1)* For the purposes of section 15 *(9) (c)* of the Act the term of office of a nominated member is three years.

(2) For the purposes of section 15 *(9) (d)* of the Act --

(a) the term of office of an elected member (other than a student member) is three years; and

(b) the term of office of a student member is two years.

SCHEDULE.

1. The election shall be conducted by the Returning Officer.

2. The Returning Officer shall be the Registrar.

3. In the performance of any of his powers or duties under this By-law, the Returning Officer may be assisted by such persons as he appoints.

4. Subject to this By-law, the election shall be effected in such manner as the Returning Officer determines.

5. In the conduct of the election of student members, academic staff members, and the general staff member, the following intervals shall be allowed:

(a) Between the date of publication or display of the notice of election and the date and time for close of nominations -- not less than fourteen and not more than twenty-eight days;

(b) Between the close of nominations and the despatch of voting papers -- not more than fourteen days; and

(c) Between the despatch of voting papers and the date and time by which completed voting papers must be returned to the Returning Officer -- not less than fourteen and not more than twenty-eight days.

6. In the conduct of the election of Convocation members, the following intervals shall be allowed:

(a) Between the date of publication of the notice of election and the date and time for close of nominations -- not less than fourteen and not more than twenty-eight days;

(b) Between the close of nominations and the despatch of voting papers -- not more than twenty-eight days; and

(c) Between the despatch of voting papers and the date and time by which completed voting papers must be returned to the Returning Officer -- not less than fourteen and not more than sixty days.

7. The Returning Officer shall give notice of the election --

(a) in the case of the election of the academic staff members or the general staff member -- by displaying the notice on a notice board at the University; and

(b) in the case of the election of the student members and the Convocation members -- by publishing the notice at least once in a newspaper circulating within the Wollongong district and the State.

8. The notice of election shall --

(a) state the number of persons to be elected and the qualifications for candidature;

(b) specify the form of the nomination; and

(c) prescribe a date and time by which nominations must reach the Returning Officer.

9. The Returning Officer shall not accept a nomination unless --

(a) it is in writing in the form specified in the notice of election;

(b) it is signed by two persons who are eligible to vote at the election for which the candidate is nominated;

(c) the person nominated has consented to stand for election by a notice in writing given to the Returning Officer before the time prescribed for the close of nominations or by a notation to that effect on the nomination form; and

(d) it is received by the Returning Officer before the time prescribed for the close of nominations.

10. If, following the close of nominations, the number of accepted nominations does not exceed the number of persons to be elected, the Returning Officer shall declare the persons nominated to be elected.

11. If, following the close of nominations, the number of accepted nominations exceeds the number of persons to be elected, the Returning Officer shall send by post or by other means a voting paper to those persons entitled to vote at the address shown in respect of those persons on the Roll of Students, Roll of Convocation, Roll of Academic Staff or the Roll of General Staff, as the case may be.

12. Each voting paper shall contain the names of the candidates in alphabetical order and shall be initialled by the Returning Officer or his deputy.

13. Each voting paper shall be accompanied by a form of declaration that the person so voting is qualified to vote at the election and by two envelopes, one marked "voting paper" and the other addressed to the Returning Officer.

14. Where a voting paper has been lost or destroyed, a duplicate may be issued by the Returning Officer upon receipt of a written declaration that the voting paper has been lost or destroyed.

15. With each voting paper sent in accordance with paragraph 11, there shall be sent a notice which --

(a) specifies the date and time by which the completed voting paper must reach the Returning Officer;

(b) contains instructions for the transmission of the completed voting paper to the Returning Officer; and

(c) states the date and time on which the votes will be counted.

16. The voter shall mark his voting paper by making a cross opposite the name of each candidate for whom he votes, but the number of candidates for whom a vote is cast shall not exceed the number of persons to be elected.

17. At the date and time appointed for the counting of votes, the Returning Officer or his deputy shall --

(a) open the outer envelope;

(b) if he is satisfied that the form of declaration has been properly completed, place the envelope marked "voting paper" with other similar envelopes;

(c) following the opening of all of the outer envelopes, open the envelopes marked "voting paper" and count the number of votes given to each candidate.

18. A voting paper received by the Returning Officer after the close of the poll shall not be taken into account at the election.

19. The Returning Officer shall reject as informal any voting paper in which the voter has not complied with the provisions of this Schedule.

20. Where an election is held to elect one member, the Returning Officer shall declare as elected the candidate who receives the highest number of votes.

21. Where an election is held to elect more than one member, the Returning Officer shall declare as elected the persons who receive the highest number of votes.

22. Where there is an equality of votes, the person to be elected shall be determined by lot by the Returning Officer.

23. For the purpose of paragraph 22, "determined by lot" means determination in the following manner:--

The name of each candidate shall be written on separate and similar slips of paper and the slips having been folded so as to prevent identification and mixed and drawn at random, the candidate whose name is first drawn shall be the elected candidate.

24. Each candidate shall be entitled to nominate a scrutineer to be present at the counting of votes and any determination by lot.

25. The voting papers in an election shall be kept in safe custody by the Returning Officer for at lease four months after the election and may be destroyed at any time thereafter with the approval of the Council.

THE UNIVERSITY OF WOLLONGONG

VISITOR

His Excellency the Governor of New South Wales

CHANCELLOR

The Honourable Mr. Justice Robert Marsden Hope, CMG, LLB *Syd.*

DEPUTY CHANCELLOR

David Edwin Parry, BE *Syd.*, Hon.DSc *W'gong.*, MIEAust, MAusIMM

VICE-CHANCELLOR

Emeritus Professor Lindsay Michael Birt, BAgrSc BSc PhD *Melb.*, DPhil *Oxon.*

DEPUTY VICE-CHANCELLORS

Professor Alexander Marshall Clarke, BA *N.S.W.*, PhD *A.N.U.*, ASTC, FAPsS
Professor Austin Keane, MSc *Syd.*, PhD *N.S.W.*

THE COUNCIL

ELECTED BY THE LEGISLATIVE COUNCIL

The Honourable Max Frederick Willis, ED, LLB *Syd.*

ELECTED BY THE LEGISLATIVE ASSEMBLY

The Honourable Lawrence Borthwick Kelly, MLA

APPOINTED BY THE GOVERNOR ON THE NOMINATION OF THE MINISTER FOR EDUCATION

To hold office until 7th August, 1978

Edgar Beale, Hon.DLitt *W'gong.*
Brian Somerville Gillett, BA DipEd *Syd.*
David Edwin Parry, BE *Syd.*, Hon.DSc *W'gong.*, MIEAust, MAusIMM
Walter Pike, MA *Lond.*

EX OFFICIO

The Chancellor
The Vice-Chancellor

ELECTED BY THE STUDENTS OF THE UNIVERSITY

To hold office until 10th August, 1979

Murray James Robinson
Robyn Lea Rowland, BA *N.S.W.*

ELECTED BY CONVOCATION

To hold office until 7th August, 1978

William Edward Parnell, BA BCom *N.S.W.*
Wilfred George Petersen, MLA(N.S.W.)
Leo James Tobin, BA MEd *N.S.W.*

ELECTED BY THE FULL-TIME ACADEMIC STAFF OF THE UNIVERSITY

To hold office until 7th August, 1978

Three Professorial members

Professor Stephen Craig Hill, BSc *Syd.*, PhD *Melb.*
Professor John Bede Ryan, MCom *Auck.*, AASA, ACA CMA(N.Z.), ACIS
Professor Brian Hartley Smith, BE PhD *Adel.*, MIEE, FIEAust

One member other than a Professor

Associate Professor James Seymour Hagan, BA DipEd *Syd.*, PhD *A.N.U.*

ELECTED BY THE FULL-TIME GENERAL STAFF OF THE UNIVERSITY

To hold office until 7th August, 1978

Colin John Lambert, BCom *W'gong.*

THE COUNCIL (CONT'D)

ELECTED BY MEMBERS OF THE COUNCIL

To hold office until 7th August, 1978

Professor Frank John Fenner, CMG, MBE, MD *Adel.*, DTM *Syd.*, Hon.MD *Monash*, FRS, FAA, FRACP, FRCP(Lond.)
Two vacancies

THE ACADEMIC SENATE

EX OFFICIO MEMBERS

The Honourable Justice R.M. Hope, Chancellor
Emeritus Professor L.M. Birt, Vice-Chancellor
Mr. J.C. Hazell, University Librarian

CHAIRMEN OF DEPARTMENTS

Professor G. Brinson, Department of Metallurgy, CHAIRMAN OF SENATE
Professor K.A. Blakey, Department of Economics
Professor A.D. Brown, Department of Biology
Professor J.L.C. Chipman, Department of Philosophy, DEPUTY CHAIRMAN OF SENATE
Professor A.M. Clarke, Department of Psychology
Professor A.C. Cook, Department of Geology
Professor R. Duncan, Department of History
Professor P. Fisher, Department of Physics
Professor C.A.M. Gray, Department of Civil Engineering
Professor B. Halpern, Department of Chemistry
Professor S.C. Hill, Department of Sociology
Professor A. Keane, Department of Mathematics
Professor R.C. King, Department of Education
Professor R.B. Leal, Department of European Languages
Professor S.A. Marshall, Department of Mechanical Engineering
Dr. J.R. Panter, Department of History and Philosophy of Science
Professor J.B. Ryan, Department of Accountancy
Professor B.H. Smith, Department of Electrical Engienering
Professor R.G.T. Southall, Department of English
Professor M.G.A. Wilson, Department of Geography

CHAIRMEN OF FACULTIES

Associate Professor S.E. Bonamy, Faculty of Engineering
Mr. C.T. Heazlewood, Faculty of Social Sciences
Ms. D.L.M. Jones, Faculty of Humanities
Associate Professor E.R. Phillips, Faculty of Science
Professor J. Reinfelds, Faculty of Mathematics

ELECTED MEMBERS

ACADEMIC STAFF ELECTED BY AND FROM THE MEMBERS OF EACH FACULTY

To hold office until 24th May, 1979

Mr. A.J. Anderson, Faculty of Social Sciences
Dr. P. Arnold, Faculty of Engineering
Mr. P. Castle, Faculty of Mathematics
Dr. W. Mitchell, Faculty of Humanities
Dr. A.J. Wright, Faculty of Science

STUDENT MEMBERS

To hold office until 24th May, 1979

Mr. G. Butler, Faculty of Engineering
Mr. J.P. Malcolm, Faculty of Social Sciences
Ms. J.A.E. Symes, Faculty of Humanities

FULL TIME STAFF

VICE-CHANCELLOR

L.M. Birt (Emeritus Professor, Australian National University), BAgrSc BSc PhD *Melb.*, DPhil *Oxon.*

FACULTY OF ENGINEERING

CHAIRMAN OF FACULTY

Associate Professor S.E. Bonamy, BE *Syd.*, MSc *Birm.*, PhD *N.S.W.*, ASTC, CEng, FIMechE, FIEAust

DEPARTMENT OF CIVIL ENGINEERING

DEPARTMENTAL CHAIRMAN AND PROFESSOR

C.A.M. Gray, Hon.JMN, BSc ME *Syd.*, Hon.DSc *N.S.W.*, Hon.DSc *W'gong.*, CEng, FIMechE, MICE, MIEAust, FIE(Malaysia), Emeritus Professor, University of Malaya

ASSOCIATE PROFESSOR

R.W. Upfold, ME PhD *N.S.W.*, ASTC, CEng, MIEAust, MIMechE, AMAusIMM

SENIOR LECTURERS

R.N. Chowdhury, BSc(Eng) *Ban.*, PGDip *Roorkee*, PhD *Liv.*, CEng, MICE, MASCE, FGS, MEERI
M.J. Lowrey, ME *N.S.W.*, PhD *W'gong.*, ASTC, MIEAust, MACS
D. Pearson-Kirk, BSc *St. And.*, MSc PhD *Leeds*, CEng, MICE, FGS, MASCE, MIHE, MIEAust

LECTURERS

M. Boyd, BSc(Tech) MEngSc PhD *N.S.W.*, MIEAust
Y.C. Loo, BSc *Cheng Kung*, MEng *A.I.T.*, PhD *Dundee*, CEng, MICE, MIStructE, MIEAust
D.G. Montgomery, BSc(Eng) PhD *Belfast*, MIEAust, MASCE

DEPARTMENT OF ELECTRICAL ENGINEERING

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TUTOR

Vacant

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P.G. Laird, MSc *Well.* and *A.N.U.*, PhD *Calg.*
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E. Gellert, DrPhil *Basle*, FRACI

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E. Kokot, BSc PhD *N.S.W.*, ASTC, ARACI

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Humanities	:	Lynn M. Edwards, BA DipEd *N.S.W.*
Mathematics Social Sciences	:	T.A. Cuthbertson, BA *Syd.*, ThL

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B.W. Lake

UNION

SECRETARY/MANAGER

Mrs. H. Susan Stevenson

FACILITIES AND SERVICES

UNIVERSITY LIBRARY

All staff and students are encouraged to use the University Library and material can be borrowed by using a staff or student library card. Fines are levied for late return of books.

The Library has the responsibility of providing material for all courses in the University curriculum and carries information in books, periodicals, other non-book and archival materials. It has a growing reference collection and endeavours to provide for needs outside curricular and research requirements.

Following the completion of Stage II of the Library complex in 1976, the Library has the capacity to accommodate 250,000 volumes and over 600 readers.

Hours of opening are usually 9a.m. - 10p.m. Monday to Friday, 9a.m. - 5p.m. on Saturday and 1p.m. - 5p.m. on Sunday. Variations in hours are displayed on notice boards in the Library.

The Library is presently used by many people from outside the University campus, particularly qualified personnel from local commerce and industry.

UNIVERSITY UNION

The Union, which provided opportunities for the development of social and intellectual intercourse between members, is housed in buildings near the main entrance at the south-east corner of the campus. It was opened in 1965, Stage II additions were added in 1970, and Stage III was completed early in 1976. Most of the physical facilities normally associated with University Union buildings have now been provided. They include an auditorium, new kitchens, a cafeteria, a coffee bar, a take-away food service, a licensed bar, a licensed restaurant, two squash courts, ample circulating space, some five common rooms and meeting rooms, new administrative offices, a Union shop and branches of the Commercial Banking Company of Sydney Limited and the University Co-operative Bookshop Limited.

All students and University staff are members of the Union. The affairs of the Union are controlled by a Board of Management and, in day to day matters, by its executive officer, the Secretary/ Manager.

The following clubs and societies are affiliated to, and supported by, the Union:

Bridge Club
Camera Club
Commerce Society
Film Group
Geological Society
History Society
Metallurgical Society
Musical Society
Parents' Club

STUDENTS' REPRESENTATIVE COUNCIL

The Students' Representative Council (S.R.C.) is a body of students elected by and from the students. The S.R.C. is the executive organisation of the entire student body. The S.R.C. promotes student welfare and interests. It provides a channel through which students can express their views on any matter relevant to themselves, their courses, the university, community, national and world affairs.

The S.R.C. is involved with the politics and welfare of being a student. As well as taking an active interest in a wide variety of issues the S.R.C. organises many social functions. The following clubs and societies are affiliated to and supported by the S.R.C.

Students for A.L.P.
Liberal Club
Communist Society
Trainee Teachers Association
Special Admissions Programme Students Association
Psychology Society
Engineering Society
Philosophy Society
Christian Union
Overseas Students Association
Motorcycle Club
Debating Society

Part of the compulsory S.R.C. subscription is paid to the Australian Union of Students (A.U.S.), the national student organisation. As a constituent member of A.U.S. the S.R.C. offers travel, health and insurance schemes (at student rates), National U (A.U.S. student paper), a means of keeping in touch with other post-secondary institutions and participation in the active Australian student Lobby.

Tertangala, the S.R.C. student Journal, and Tertlet, the S.R.C. weekly broadsheet are published throughout the year. Students are invited to submit articles and items for publication.

Most importantly students are encouraged to participate in the running and activities of the S.R.C. Some present portfolios and interests are:

Education	A.U.S.
Environment	Student Publications
Women	Social activities

The S.R.C. belongs to the students; they are encouraged to use it.

SPORTS ASSOCIATION

All students pay a compulsory fee which automatically makes them members of the Sports Association. A proposition that all employees of the University automatically become members is under consideration. Membership entitlements include the use of the recreational facilities provided by the Sports Association. Members may also join one or other of the constituent clubs of the Association at a small extra subscription.

The Sports Association aims to provide physical recreation facilities of an opportunity-type for individuals or small groups. In addition, it aims to ensure that its constituent clubs are provided with adequate playing surfaces and associated equipment, that adequate funds are available to subsidise travelling, and that both clubs and individuals are encouraged to attain higher sporting standards through competition under the auspices of local associations and through inter-varsity competitions, representative matches and championships organised by the Australian Universities Sports Association.

A sports pavilion (with licensed bar) and two squash courts have been provided and enlargements and improvements to existing playing fields are being undertaken. Plans for an indoor recreation centre are being considered.

The constituent clubs of the Sports Association are as follows. Enquiries in respect of them should be made at the Union Office:

Australian National Football	Outdoors
Badminton	Rugby Union
Basketball	Sailing
Cricket	Soccer
Fencing	Squash
Hockey (men)	Table Tennis
Women's Hockey	Tae Kwon Do
Hang Glide	Tennis

CHAPLAINCY SERVICE

A Chaplaincy Service is provided within the University, for the benefit of students and staff, by four Christian Churches.

The Service offers fellowship, personal counselling and guidance, and leadership in biblical and doctrinal studies and in worship. The visiting Chaplains maintain close liaison with student religious societies. The visiting Chaplains may be contacted at their private addresses or through the Registrar.

Anglican:	Rev. Canon R.H. Goodhew, The Rectory, Market Street, Wollongong 2500. Tel. 28 9132.
Presbyterian:	Rev. I. Cox, 8/10 Corrimal Street, Wollongong 2500. Tel. 29 1725(office), 29 5358(home).
Roman Catholic:	Rev. Father L. Stevens, The Presbytery, 48 Princes Highway, Unanderra 2526. Tel. 71 1068.
Uniting:	Rev. L.L. Arthur, 75 Uralba Street, Figtree 2525. Tel. 292119(office), 29 5291(home).

COUNSELLING SERVICE

The experience of attending the University brings about change in people. The extra knowledge gained in study is only one element of change. So as to make constructive and creative personal

change the Counsellors offer the University community various skills and techniques.

At certain particular stages the assistance of a counsellor may be indicated, e.g. before attending University to make the transition to University as smooth as possible. Where the individual feels distressed or unable to resolve a difficulty alone, where a situation or crisis arises with which it is difficult to cope, individual counselling is available. These situations could involve lack of motivation, inability to study effectively, dissatisfaction with one's rate of progress, anxiety in examinations, uncertainty about course-choice or career goals; they could involve feelings; anxiety, confusion, depression; they may be to do with interpersonal relationships; people with whom one works, studies or lives, family communication; they could involve graduation and dealing with transition from the University.

Counsellors maintain contacts with all sorts of other resource people. So if the Counsellor or client feels that there is more to be gained from talking to someone else, the client can be put in touch with that person, e.g. at the Careers Reference Centre.

However, counselling is not merely a first-aid station for those who are in the throes of some kind of crisis. To help people expand and enrich their lives counsellors are prepared to deal directly with individuals. Groups are also formed from time to time to create more effective learning environments. Such groups aim to improve the quality of living rather than solve problems. Examples are groups devoted to career life planning, increasing social skills, overcoming shyness, developing communication skills and human relations, psychodrama and groups for women.

To a student or member of staff there will simply be times when a more objective and trained listener is of benefit. It is at those times Counsellors hope people will come along to the Counselling Centre (White Hut, Building 9, telephone 29 7311, extension 355). The service is completely confidential and free of charge to all staff, students and intending students.

ACCOMMODATION

The Secretary in the Counselling Centre conducts a Student Accommodation Service for a range of private accommodation, e.g., board (both 7 and 5 day), single rooms, flats and houses made available by the local community in response to media advertisements.

In addition to the General Accommodation Service, the Secretary also conducts a University Leasing Service. The previously established system will continue to operate whereby the University leases a number of flats and cottages and subleases these to groups of students.

Individual students wishing to take private board, or groups of students wishing to lease a property from the University should contact the Secretary in the Counselling Centre which is located in the Hut (near the tennis courts), or telephone her at 29 7311, extension 355 as early as possible in the year.

INTERNATIONAL HOUSE

Warden: T.A. Lambert, ThB, PhD, CMC, JP
Dean of Students: N.Q. Thoi, BE, GradIEAust

International House is the only residential College at Wollongong affiliated with the University. It is situated between the University and the North Wollongong beaches on the Princes Highway at its junction with the Wollongong "By-Pass".

The College is operated as a co-educational non-denominational College by the Council of International House, and is owned by the YMCA of Wollongong. The College philosophy attempts to build a community which combines the best features of the older traditional Colleges with a more modern approach to corporate life. International House holds to a strong belief in the contribution that the individual may make to his community in an atmosphere which will enrich his experience of learning within the University. As indicated by its title the College provides a place of living for overseas students, thus providing for a meeting place of varying cultures.

The College presently provides for 200 graduate and undergraduate students and 10 tutors.

The resident students, both male and female, are housed in five three-level residential blocks. Facilities include a large common room, dining room, tutorial rooms, music and television rooms, laundry, students' kiosk and a large multi-purpose recreational hall for student functions, films, etc.

Academic Tutorials are available to residents and are organised by the Dean of Students, who is specifically in charge of the student's study life within the College.

To cater for the large number of students who live close to Wollongong and who return home for weekends the cost of meals is not charged in students' fees. Meals may be purchased in the Dining Room as required.

For further information, contact the Warden, International House, P.O. Box 1799, Wollongong 2500. Tel. 29 9015.

EMPLOYMENT

The Student Employment Service, run in conjunction with the Commonwealth Employment Service, is located in the Hut. The Service provides information about casual and part-time work throughout the year, plus vacation work. All positions available are displayed on two boards: one in the Hut, the other in the Union Foyer.

Students interested in tutoring in any subject at any level, may register with the Counselling Centre Secretary. All positions available will be individually notified where possible.

All enquiries concerning casual, part-time, vacation work and tutoring should be directed to the Student Employment Service, telephone 29 7311, extension 355.

MEDICAL SERVICE

A Student Medical Service has been established at the University and is located in the Hut. The names of the practitioners together with surgery times are available on campus notice-boards.

Students registered with Medibank sign Medibank forms for the practitioner and students registered with Private Funds pay a fee equal to the benefit paid for ordinary consultation by the Private Fund. A receipt will be issued to those students so that they can claim benefits.

It is preferable that appointments be made prior to surgery hours.

For enquiries about the Service or to make an appointment contact the Counselling Centre Secretary, telephone 29 7311, extension 355.

ADMISSION AND MATRICULATION

1. GENERAL PROVISIONS

1.1 All candidates for a degree of the University shall:

1.1.1 either (a) have matriculated to the University and have lodged an Application for Admission form, or
(b) applied for admission to the University under the special provisions in these regulations;

1.1.2 have been selected for a degree course; and

1.1.3 have satisfied pre-requisites approved by the Academic Senate for a subject before enrolment in that subject.

1.2 Should the number of qualified persons seeking enrolment in any degree, or subject, exceed the number of places available, the Council may limit the number of students enrolling in a particular degree, or subject. In this event candidates would be required to be selected for the degree or subject for which limitations had been imposed.

2. MATRICULATION

2.1 A person who obtains at an examination approved by the Academic Senate a level of performance determined by the Academic Senate from time to time shall be matriculated to the University; provided that the Academic Senate may grant matriculation to a candidate who has:

2.1.1 matriculated to any Australian university;

2.1.2 matriculated to any university outside Australia approved by the Academic Senate;

2.1.3 graduated from any university approved by the Academic Senate;

2.1.4 submitted evidence acceptable to the Academic Senate of a satisfactory level of performance in the sixth form of a school in New South Wales, or its equivalent in other states of Australia;

2.1.5 matriculated to the University under the provisions existing in 1975 and 1976.

3. EXAMINATIONS APPROVED BY THE ACADEMIC SENATE

3.1 Examinations approved by the Academic Senate in accordance with 2.1 above are:

3.1.1 The New South Wales Higher School Certificate examination, provided that the rules of the examination relating to the presentation of subjects as determined by the New South Wales Board of Senior School Studies have been complied with; and

3.1.2 The University of Sydney Matriculation Examination.

4. NEW SOUTH WALES HIGHER SCHOOL CERTIFICATE EXAMINATION

4.1 The following subjects, and any other subjects approved by the Academic Senate, shall be recognised subjects for the purpose of matriculation at the New South Wales Higher School Certificate examination:

Agriculture
Ancient History
Art
Chinese
Classical Greek
Dutch
Economics
English
Farm Mechanics
* Food & Textile Science
French
General Studies
Geography
German
Hebrew
Home Science
Indonesian
Industrial Arts
Italian
Japanese
Latin
Mathematics
Modern Greek
Modern History
Music
Russian
Science
Sheep Husbandry and Wool Technology
Spanish
Textiles and Design

*NOTE: Food and Textile Science cannot be offered together with Home Science and/or Textiles and Design.

4.2 A candidate's performance shall be measured by the aggregate of marks gained in the examination, such marks being co-ordinated in a manner approved by the Academic Senate.

4.3 The aggregate of co-ordinated marks shall include the co-ordinated marks achieved in ten units in approved matriculation subjects.

4.4 When more than ten units from approved matriculation subjects are presented, the ten highest co-ordinated marks from among such other subjects shall be counted.

4.5 There shall be no restriction on the number of 4 Unit, 3 Unit, 2 Unit and 2 Unit A courses that may be included in the aggregate of co-ordinated marks.

5. SPECIAL PROVISIONS FOR ADMISSION

5.1 The Academic Senate may grant a candidate admission to the University where the candidate:

5.1.1 has, since leaving school, satisfactorily completed over a period of not less than two years full-time or three years part-time, a course of study acceptable to the Academic Senate for this purpose; or

5.1.2 is not less than twenty-one years of age on 1st March of the year for which admission is sought and the Academic Senate is satisfied that he has reasonable prospects of success in university studies; or

5.1.3 although not qualified for admission under clauses 5.1.1 and 5.1.2 above, nevertheless satisfies the Academic Senate that in the special circumstances of his case he has reasonable prospects of success in university studies.

5.2 The Academic Senate, before admitting a candidate under these special provisions, may prescribe certain requirements including the taking of examinations.

5.3 A candidate admitted under these special provisions shall be subject to the Degree Requirements as if he had been a matriculated student.

5.4 A candidate admitted under these special provisions, after being credited with twenty-four credit points or equivalent in subjects passed at this University, may be granted matriculation by the Academic Senate.

5.5 The Council may impose quotas for the number of candidates to be granted admission under each, or any, of the clauses in 5.1 above.

100-LEVEL SUBJECT PRE-REQUISITES

Although there are no formal pre-requisites for the degree courses, some 100-level (First Year) subjects have N.S.W. Higher School Certificate pre-requisites. These pre-requisites, in many cases, affect the subjects which students may include in their course. In this regard, attention is drawn to the notes listed under the following table. (Similar subjects passed at interstate matriculation examinations will be considered.) Intending *Engineering* and *Metallurgy* students should particularly take notice of "Note 1" below.

Subject	*Mandatory Pre-requisite*	*Recommended Pre-requisite*
Mathematics IA	2 Unit Mathematics at N.S.W.H.S.C.: 2nd grade or higher provided the student has a suitable aggregate score or on the recommendation of the relevant high school principal; 3 Unit Mathematics at N.S.W.H.S.C.: 4th grade or higher; 4 Unit Mathematics at N.S.W.H.S.C.: either (a) 4th grade or higher (b) 5th grade, provided the student has a suitable aggregate score, or on the recommendation of the relevant high school principal.	
All first year subjects offered by the departments of Civil, Mechanical and Electrical Engineering and the Department of Metallurgy		2 Unit Mathematics, 2nd grade or better *and* 2 Unit Science *or* 2 Unit Industrial Arts
Physics, Chemistry, Biology		2 Unit Science Course
Economics		2 Unit Mathematics

NOTES:

1. Mathematics IA is a compulsory subject in all 100-level Engineering and Metallurgy courses and, therefore, the pre-requisite for this subject must also be obtained.
2. Mathematics IA is a co-requisite for 100-level Physics courses (except "Art of Physics" -- this subject is not intended for those majoring in Physics and cannot be counted with other First Year Physics courses) and Mathematics IB.

3. The assumed knowledge of Mathematics IA is that of the 3 Unit Mathematics Course at the N.S.W. H.S.C. examination.
4. 100-level Chemistry is a pre-requisite for later year courses in Biology and Chemistry.
5. Some of the proposed pre-requisites are recommended and not mandatory. However, any student wishing to take Physics, Chemistry or Biology without the recommended 2 Unit Science Course at the N.S.W.H.S.C. examination, would be advised to discuss the matter with the departmental chairman concerned.

ENROLMENT AND RE-ENROLMENT

UNDERGRADUATE

The enrolment procedure in 1978 for the different classes of undergraduate students is as follows:

FIRST ENROLMENTS

All applications for admission must be lodged with the University *not later than 1st October, 1977,* by *all* applicants. Late applications will be considered if possible.

Students whose applications for enrolment are accepted will be required to complete their enrolment at a specified time before the start of Session 1. Charges must be paid on the day specified.* However, in special circumstances and provided class places are still available students may be allowed to complete their enrolment after the prescribed date, subject to the payment of a late charge.

RE-ENROLMENTS

All students enrolling other than for the first time should re-enrol by attending the University to complete re-enrolment, including the payment of charges, on days prescribed. Students will be informed by the end of 1977 of the dates and procedures for re-enrolment.

Students who are unable to attend the University to complete re-enrolment on the days prescribed should apply in writing to the Registrar for approval to re-enrol at a later date.

Students who have completed the final examinations but have a thesis still outstanding are required to enrol and pay the requisite charges.

Enrolment must be completed during the prescribed enrolment period. Students who fail to comply with this requirement will incur a late charge of $10. For details of charge requirements, including late charge provisions, see under Charges.

No student is considered to have completed his enrolment until all fees and charges have been paid.

COURSE TRANSFERS

Students who are currently enrolled at the University and who wish to transfer to another course at the University should submit an "Application for Admission" in the same manner as is required of new applicants.

Students whose applications to transfer are successful are required to comply with the enrolment procedures for the *new* course in which they expect to enrol. Unless otherwise instructed they must present the letter granting approval of the transfer to the enrolling officer.

Students who have not received advice regarding their application to transfer before the date on which they are required to enrol should check at the Student Enquiries Office.

RESUMPTION OF COURSES

Students who have been granted leave of absence for 1977 should contact the Registrar by 13th January, 1978, for information on enrolment procedures.

All other students seeking to resume their studies after an absence of twelve months or more are required to submit an "Application for Admission" in the same manner as is required of new applicants.

Students re-enrolling in this way will normally be required to satisfy conditions pertaining to the course at the time of re-enrolment. This condition applies also to students who have been re-admitted to a course after exclusion under the rules restricting students re-enrolling.

MISCELLANEOUS SUBJECT ENROLMENTS

Applications from students to enrol for miscellaneous subjects (i.e. as students not proceeding to a degree or diploma) may be considered provided the Chairman of the Department offering the subject considers it will be of benefit to the student and there are facilities available. Only in exceptional cases will subjects taken in this way count towards a degree or diploma. Where a student is under exclusion he may not be enrolled in miscellaneous subjects unless given approval by the Academic Senate.

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*Refer to p.40

Application forms can be obtained by written application to the Registrar or from the Student Enquiries Office, First Floor, Administration Building. Application forms should be received by the Registrar by 13th January, 1978.

FINAL DATES FOR COMPLETION OF ENROLMENT

No enrolments will be accepted from *new students* after the end of the second week of Session 1 (10th March, 1978) except with the express approval of the Registrar and the Departmental Chairman concerned; no *later year enrolments* will be accepted after the end of the fourth week of Session 1 (24th March, 1978) without the express approval of the Registrar which will be given in exceptional circumstances only.

VARIATION OF ENROLMENTS

Students wishing to vary their enrolment, that is by discontinuing subject(s) or by enrolling in additional subject(s) may do so by submitting to the Student Enquiries Office a "Notification of Variation of Enrolment" form duly signed by an Academic Adviser.

Where the variation of course includes the discontinuance of subject(s), the student shall be deemed as not having enrolled in the subject(s) if he discontinues before the end of the fourth week of session in which the subject(s) commenced. Where the discontinuance occurs after the end of the fourth week of the session in which the subject commenced, the student shall be recorded as discontinuing from the date on which the discontinuance occurs, except that where a student discontinues after the last day of classes, as set out in the University Calendar for the appropriate session, a result shall be determined.

The following special conditions also apply to the variation of enrolments:

(a) Where a student discontinues a subject or subjects but does not formally advise the Registrar of the discontinuance, a Fail grade will be entered on the student's academic record;

(b) where a student attempts a subject in which he is nor formally enrolled, no result will be determined;

(c) any variation of entries included in a student's academic record in pursuance of (a) or (b) above, shall be subject to a charge of $40 for each variation.*

Applications for variations to academic records referred to in part (c) of the special conditions mentioned above will be considered in relation to the Bachelor Degree Requirements. Any student wishing to vary his academic record under these special conditions should apply on the appropriate form which is available from the Student Enquiries Office.

POSTGRADUATE

RESEARCH DEGREES

Application forms for registration are obtainable from the Student Enquiries Office, First Floor, Administration Building.

Before lodging an application applicants are advised to contact the appropriate Departmental Chairman to discuss research interests, suitability of qualifications held, and the availability of facilities for research in particular areas.

COURSES REQUIRING ATTENDANCE AT FORMAL LECTURES

Students wishing to enrol as candidates for postgraduate degrees or diplomas requiring attendance at formal lectures should make application on the appropriate form available from the Student Enquiries Office.

No enrolments will be accepted after 31st March without the express approval of the Registrar, which will be given in exceptional circumstances only.

Students who have completed the final examinations, but have a thesis or project still outstanding are required to enrol and pay any requisite charges. However, when the student submits his thesis for examination, he will receive a refund of the student charges on the same basis as if he had notified the University of his withdrawal from the course.**

RE-ENROLMENT

Enrolment forms will be sent to re-enrolling students at the beginning of the year with instructions concerning re-enrolment procedure.

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* Refer to p.41
**Refer to p.42

STUDENT CHARGES*

Students, both undergraduate and postgraduate, are required to meet the following charges:

1. Penalty charges such as late charges, parking fines, etc.
2. Administrative charges such as "statement of record" charges, "review of result" charges or charges for examinations requiring special arrangements.
3. Cost of travel incurred by students attending practical work for courses in social work, teacher training, etc.
4. Cost of travel incurred by external students attending residential schools.
5. Accommodation charges and cost of subsistence on excursions, field work, etc.
6. Charges for special clothing or laundry costs.
7. Purchase of instruments or equipment.
8. Cost of handbooks and notes.
9. Charges associated with the development and operation of unions, student associations, students' representative councils and other student activities.
10. Deposits and refundable charges.

COMPULSORY CHARGES

All registered students will be required to pay:

University Union# - entrance charge $25

Sports Association# - entrance charge ..... $ 6

Student Activities charges:

University Union# - annual subscription $57

Sports Association# - annual subscription $14

Students' Representative Council - annual subscription $14

SPECIAL EXAMINATION CHARGES

Deferred examination ..... $ 8 for each subject

Examinations conducted under special circumstances ..... $11 for each subject

Review of examination result ..... $11 for each subject

LATE CHARGES

Failure to attend enrolment centre during the prescribed period $10

All students are required to pay charges before the beginning of session 1.

Charges not paid by the first day of session 1 and before the end of the second week of session $20

Charges not paid by the end of the second week of session but paid before the end of the fourth week of session where accepted with the express approval of the Registrar $40

CONFIRMATION OF ENROLMENT

Failure to return the Confirmation of Enrolment form by the date to be determined by the Registrar $10

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*All charges listed are current at time of printing.

#Life members of these bodies are exempt from the appropriate charge or charges.

VARIATION OF ACADEMIC RECORD

Variations of entries in a student's academic record in pursuance of conditions (a) and (b)* ..... $40 for each variation

WITHDRAWAL

1. Students withdrawing from a course are required to notify the Registrar in writing.

2. Where notice of withdrawal from a course is received by the Registrar before 27th February a refund of all charges paid will be made.

3. On notice of withdrawal on or after 27th February and prior to 24th March, a full refund of student activities charges, other than entrance charges, will be made but thereafter no refund will be made, except as provided for in section 4 below. Student activities charges are listed on the previous page.

4. If a student's initial enrolment in any year is made at the commencement of Session 2 for Session 2 only and the student gives notice of withdrawal prior to 18th August, a full refund of student activities charges, other than entrance charges will be made but thereafter no refund will be made.

5. Late charges are not refundable.

EXTENSION OF TIME

Any student who is unable to pay charges by the due date may apply on the prescribed form to the Registrar for an extension of time. Such application must state clearly and fully the reasons why payment cannot be made and the extension sought, and must be lodged before the date on which a late fee becomes payable. Normally the maximum extension of time for the payment of charges is until 24th March.

ASSISTED STUDENTS

Scholarship holders or Sponsored Students who have not received an enrolment voucher or appropriate letter of authority from their sponsor at the time when they are enrolling should complete their enrolment paying their own charges. A refund of charges will be made when the enrolment voucher or letter of authority is subsequently lodged with the Cashier.

FAILURE TO PAY CHARGES

Any student who is indebted to the University and who fails to make a satisfactory settlement of his indebtedness upon receipt of due notice ceases to be entitled to membership and privileges of the University. Such a student is not permitted to register for a further session, to attend classes or examinations, or to be granted any official credentials.

No student is eligible to attend the annual examinations in any subject where any portion of his charges for the year is outstanding after 18th August.

In very special cases the Registrar may grant exemption from the disqualification referred to in the two preceding paragraphs upon receipt of a written statement setting out all relevant circumstances.

CASHIER'S HOURS

The Cashier's office is open for the payment of charges from 9.30a.m. to 4.30p.m., Monday to Friday. The Cashier's office may be open for additional periods during enrolment and re-enrolment. Details of these additional times may be obtained from notices posted at the Cashier's office.

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*Refer to "Variation of Enrolment" in Undergraduate Enrolment and Re-enrolment section for details of conditions (a) and (b), p.39

RESEARCH DEGREE - SPECIAL NOTE

A candidate who at the end of a year has completed all work for a postgraduate degree other than the writing up of the thesis and who anticipates submitting the thesis to the Registrar for examination during the following year is required to re-enrol for that year and pay the appropriate student charges outlined above. However, when the student submits his thesis for examination he will receive a refund of the student charges on the same basis as if he had notified his withdrawal from the course.

SCHOLARSHIPS

UNDERGRADUATE SCHOLARSHIPS

AUSTRALIAN GOVERNMENT ASSISTANCE

The Australian Government provides assistance to students by way of the Tertiary Education Assistance Scheme. Details of application procedure and further information are available from the Regional Director, N.S.W. State Office, Department of Education, Central Square, 323 Castlereagh Street, Sydney 2000 (Telephone: 218 8800).

TEACHER EDUCATION SCHOLARSHIPS

The N.S.W. Department of Education offers scholarships to enable students to undertake studies for a University degree, to specialise in the subjects for which it has a need for teachers in secondary schools, or to become primary teachers. The degree would be followed by a year of teacher education. Benefits include the payment of living allowances and, in some instances, book allowances and compulsory fees.

Students who have partly completed their courses and graduates are eligible to apply, as are those who have completed secondary education.

Application forms for scholarships, and further information will be available from the Teacher Education Advisory Office on the University of Wollongong campus (P.O. Box 1741, Wollongong 2500, Telephone: 28 4033).

Applications close on 1st October each year.

POSTGRADUATE SCHOLARSHIPS*

UNIVERSITY POSTGRADUATE SCHOLARSHIPS

The University provides each year a number of scholarships for postgraduate study and research in any approved field.

These awards are normally for graduates of Australian Universities who are domiciled in Australia. They are tenable for one year and, subject to satisfactory progress, may be renewed annually to provide a maximum tenure of two years in the case of a scholar registered for the degree of Master. In the case of a scholar registered for the degree of Doctor of Philosophy the award is tenable for up to a maximum of three years, but an extension for one year may be granted if special circumstances apply.

Stipend - Scholars will receive a stipend at the rate of $4,000 per annum, with a dependants' allowance at the rate of $1,508 for dependant wife and first child, and $390 for each other child. An incidentals allowance of $100 is paid to assist with Union, Students' Representative Council and Sports Association charges.

Travel Allowance - In some cases a travel allowance (equivalent to a tourist air fare where appropriate) may be paid for a scholar who is obliged to move from one Australian city to another in order to take up his award. Travel allowance is also payable for dependants.

Establishment Allowance - In some cases an allowance of $200 will be paid to married scholars, and $150 to single scholars, who are entitled to a Travel Allowance. The establishment allowance is intended to assist scholars with removal expenses and with the expenses of setting up new quarters.

Thesis Allowance - In some cases a scholar may claim reimbursement of an amount of up to $400 to assist with PhD thesis costs, and up to $250 for a Master's thesis.

Income Tax - The stipend provided by a scholarship is normally exempt from income tax.

In some cases, scholarship holders may supplement their stipends by undertaking up to a maximum of six hours' teaching or demonstrating weekly, or a total of 180 hours in a calendar year. Opportunities for such work are usually available within the University. It is expected that scholarship holders will not engage in any other form of paid employment, and will be engaged full-time on the work for which the scholarship is provided.

Normally a person may not hold more than one postgraduate scholarship.

Applications should be lodged with the Registrar by 31st October each year.

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*Rates quoted are current at time of publication.

AUSTRALIAN GOVERNMENT POSTGRADUATE RESEARCH AWARDS

A number of Australian Government Postgraudate Research Awards are available to students undertaking full-time postgraduate research at the University, leading to the degree of Master and/or PhD.

Persons permanently domiciled in Australia, who are University graduates or will graduate in the current academic year, are eligible for the awards.

Applicants should hold, or expect to obtain, at least an upper division second class honours degree or its equivalent.

Awards are tenable for one year and, subject to satisfactory progress, may be renewed annually to provide a maximum tenure of two years in the case of a scholar registered for the degree of Master. In the case of a scholar registered for the degree of Doctor of Philosophy the award is tenable for up to a maximum of three years, but an extension for one year may be granted if special circumstances apply.

Stipend is $4,000 per annum, with a dependants' allowance at the rate of $1,508 for dependent wife and first child, and $390 for each other child. There is provision for Establishment, Travel, Incidentals and Thesis Allowances.

The closing date for applications is 31st October.

AUSTRALIAN GOVERNMENT POSTGRADUATE COURSE AWARDS

A number of awards for full-time postgraduate study leading to the degree of Master by formal course-work are also made available by the Australian Government.

Persons permanently domiciled in Australia and who are University graduates or will graduate in the current academic year, are eligible for the awards.

Applicants are expected to have an undergraduate record at better than pass level.

Stipend and allowances are as for the Australian Government Postgraduate Research Awards.

Applications close on 30th September.

APPLICATIONS AND ENQUIRIES

Application forms for postgraduate awards are available from the University. Applications should be lodged with the Registrar by the specified date.

Separate application for registration as a higher degree candidate should be made on the appropriate form, in accordance with conditions applying to the particular degree.

Further enquiries may be directed to the Student Enquiries Office.

STUDENT PROCEDURES

GENERAL CONDUCT

Acceptance as a member of the University implies an undertaking on the part of the student to observe the regulations, by-laws and other requirements of the University, in accordance with the declaration signed at the time of the enrolment.

Smoking is not permitted during lectures, in examination rooms or in the University Library. Gambling is also forbidden.

Members of the academic staff of the University, senior administrative officers, and other persons authorised for the purpose, have authority, and it is their duty to check and report on disorderly or improper conduct or any breach of regulations occurring in the University.

INDEBTEDNESS TO THE UNIVERSITY

Any student who is indebted to the University and who fails to make a satisfactory settlement of his indebtedness upon receipt of due notice ceases to be entitled to membership and privileges of the University. Such student is not permitted to attend classes or examinations, or to be granted any official credentials.

Indebtedness to the University includes the non-payment of charges, late charges, library fines, the non-payment of student loans and any arrears in rent or other financial obligations resulting from an accommodation agreement entered into with the University.

In very special cases the Registrar may grant exemption from the disqualification referred to in the preceding paragraph upon receipt of a written statement setting out all the relevant circumstances.

CHANGE OF ADDRESS

Students are requested to notify the Registrar in writing of any change in their address as soon as possible. Forms for this purpose are available from the Student Enquiries Office. Failure to do this could lead to important correspondence (e.g. confirmation of enrolment forms, examination results, etc.) or course information not reaching the student. The University cannot accept responsibility if official communications fail to reach a student who has not notified the Registrar of a change of address.

CHANGE OF NAME BY MARRIAGE OR DEED POLL

All records held, and statements issued by the University will be in the name given by students at the time of their admission to the University.

Students who change their name by marriage or by Deed Poll and who also wish to change their name on University records should complete a Change of Name form which is available from the Student Enquiries Office, Administration Building, and present for notation the original Marriage Certificate or Deed Poll document.

OWNERSHIP OF STUDENTS' WORK

The University reserves the right to retain at its own discretion the original or one copy of any drawings, models, designs, plans and specifications, essays, theses or other work executed by students as part of their courses, or submitted for any award or competition conducted by the University.

NOTICES

Official University notices are displayed on the notice boards and students are expected to be acquainted with the contents of those announcements which concern them.

STUDENTS' TRAVELLING CONCESSION PASSES

The various transport authorities provide fare concessions for certain classes of students.

Application forms for these concessions may be obtained from the Student Enquiries Office, First Floor, Administration Building.

Train:

Identification cards issued by the Railways of Australia are available to full-time students to enable them to travel at concession rates on railways within Australia.

Aircraft:

Concession fares for travel overseas, inter-state and intra-state are available under the conditions ruling for the various operating companies.

STUDENT IDENTIFICATION CARDS

All students are issued with a new Student Identification Card at the beginning of each year of enrolment. This card must be carried during attendance at the University and shown on request.

The number appearing on the front of the card is the student registration number used in the University's records. This number should be quoted in all correspondence.

The card must be presented when varying enrolment, when applying for travel concessions and when notifying a change of address.

A student who loses his identification card must notify the Registrar as soon as possible. Forms for this purpose are available from the Student Enquiries Office, First Floor, Administration Building.

All students will be issued with a Student Identification Card as soon as possible after enrolment. In the meantime, the receipt form issued at the time of enrolment should be carried during attendance at the University and shown on request. If the identification card is not received within six weeks of enrolment the Student Enquiries Office should be advised.

LOST PROPERTY

Enquiries concerning lost property should be made to the Student Enquiries Office, First Floor, Administration Building, and the Union Office.

APPLICATION OF RULES

Any student who requires information on the application of the rules or any service which the University offers, may make enquiries at the Student Enquiries Office.

EXAMINATIONS

Formal University examinations may take place at the end of the first or second session. Timetables showing time and place at which individual examinations will be held are posted on notice boards. Mis-reading of the timetable is not an acceptable excuse for failure to attend an examination. Examination results are posted to the session addresses of students. *No information concerning examinations or results will be given by telephone.*

Examination results may be reviewed for a charge of $11 a subject which is refundable in the event of an error being discovered. Applications for review must be submitted on the appropriate form, together with the necessary charge by the date indicated on the notification of results.

RULES AND PROCEDURE FOR THE CONDUCT OF EXAMINATIONS

(a) Candidates are required to obey any instruction given by an examination supervisor for the proper conduct of the examination.

(b) Candidates are required to be in their places in the examination room not less than ten minutes before the time for commencement.

(c) No bag, writing paper, blotting paper, manuscript or book, other than a specified aid, is to be brought into the examination room.

(d) No candidate shall be admitted to an examination after thirty minutes from the time of commencement of the examination.

(e) No candidate shall be permitted to leave the examination room before the expiry of thirty minutes from the time the examination commences.

(f) No candidate shall be re-admitted to the examination room after he has left it unless during the full period of his absence he has been under approved supervision.

(g) A candidate shall not by any improper means obtain, or endeavour to obtain, assistance in his work, give, or endeavour to give, assistance to any other candidate, or commit any breach of good order.

(h) Smoking is not permitted during the course of examinations.

(i) A candidate who commits any infringement of the rules governing examinations is liable to disqualification at the particular examination, to immediate expulsion from the examination room, and to such further penalty as may be determined in accordance with the By-Laws.

DEFERRED EXAMINATIONS

Most departments at the University do not offer deferred examinations except in medical and compassionate cases.

TERMINATING PASSES

The award of the grade of terminating pass will prohibit a student progressing to the next subject in a sequence for which the subject in which the terminating pass is awarded, is a pre-requisite. However, students are not prevented from repeating a subject for which a terminating pass has been awarded.

APPLICATION FOR ADMISSION TO A DEGREE OR DIPLOMA

Applications for admission to a degree or the award of a diploma of the University must be made on the appropriate form by 6th January. Applicants should ensure that they have completed all requirements for the degree or diploma, including industrial training where necessary.

PRIZES

The following prizes are awarded to students of the University. Details of the conditions of award of the prizes are available from the Student Enquiries Office.

The Australasian Institute of Mining and Metallurgy (Illawarra Branch) Geology Prize

1976: *A.C. Hutton*

The Australasian Institute of Mining and Metallurgy (Illawarra Branch) Metallurgy Prize

1976: *K.A. Christian*

The Australian Institute of Metals (Port Kembla Branch) Metallurgy Prize

1976: *G.H. Thomas*

The Australian Iron and Steel Prize (Metallurgy)

1976: *J.P. Piper*

The Australian Society of Accountants Prizes (Accountancy)

1976: *(1) J.D. Henington*
(2) G.D. Boxsell
(3) M.G. Harvey

The Peter Beckmann Memorial Prize (Chemistry)

1976: *C.M. Brial*

The Blue Circle Southern Cement Limited Maldon Works Prize (Metallurgy)

1976: *J. Jordan*

The Corporate Affairs Commission Prize (Accountancy)

1976: *A. Zeme*

The Marjory Brown Prize (English - Women Students)

1976: *C.B. Akhurst*

The Commonwealth Banking Corporation Prize (Metallurgy)

1976: *W.M. Swire*

The Darryl Condon Memorial Prize (Metallurgy)

1976: *V. Tambakis*

The G.W. Daniels Memorial Prize (Chemistry)

1976: *R.J. Bykerk*

The Illawarra Group of the Institution of Engineers, Australia, Prizes for Engineering

1976: *(1) (Full-time) C.P. Kennedy*
(2) (Part-time) P. Evans

The John Lysaght Australia Limited Prize (Metallurgy)

1976: *G.H. Thomas*

The Metallurgical Society Award (Metallurgy)

1976: *P.D. Edwards*

The Metal Manufactures Prize (Metallurgy)

1976: *P.W. Boehme*

The Gina Savage Prize (Science - Women Students)

1976: *M.D. Harvey*

The S.A. Senior Prize (Mathematics)

1976: *R.A. Dowdell*

BACHELOR DEGREE REQUIREMENTS*

Being Requirements for -

The Degrees of:

Bachelor of Arts
Bachelor of Commerce
Bachelor of Engineering
Bachelor of Metallurgy
Bachelor of Science

The Honours Degrees of:

Bachelor of Arts
Bachelor of Commerce
Bachelor of Engineering
Bachelor of Metallurgy
Bachelor of Science

PART I -- PRELIMINARY

SHORT TITLE

1. These Requirements may be cited as the "Bachelor Degree Requirements".

COMMENCEMENT

2. These Requirements shall come into operation on 1st January, 1975.

PARTS

3. These Requirements are divided into parts, as follows:

Part I - Preliminary (Clause 1-6)
Part II - General (Clause 7-15)
Part III - Bachelor of Arts (Clause 16)
Part IV - Bachelor of Commerce (Clause 17)
Part V - Bachelor of Engineering (Clause 18)
Part VI - Bachelor of Metallurgy (Clause 19)
Part VII - Bachelor of Science (Clause 20)
Part VIII - Honours Degrees (Clause 21-28)
Part IX - Miscellaneous (Clause 29-31)
Part X - Schedules

ABBREVIATED TITLES

4. In the University of Wollongong there shall be degrees of Bachelor as follows:

4.1 the degrees of

Bachelor of Arts (BA)
Bachelor of Commerce (BCom)
Bachelor of Engineering (BE)
Bachelor of Metallurgy (BMet)
Bachelor of Science (BSc)

4.2 the honours degrees of

Bachelor of Arts (BA(Hons))
Bachelor of Commerce (BCom(Hons))
Bachelor of Engineering (BE(Hons))
Bachelor of Metallurgy (BMet(Hons))
Bachelor of Science (BSc(Hons))

INTERPRETATION

5.1 In these Requirements, unless the contrary intention appears,

5.1.1 "Course" means both the combination of subjects taken in any one year, and the sequence of subjects taken over several years, leading to a degree of the University;

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*Some proposed amendments to these Requirements are being considered by Council. Students are advised to check with the Student Enquiries Office for any changes which will apply in 1978.

5.1.2 "Subject" means a unit of study of single or double session duration;

5.1.3 "100-level subject" means a subject at first year level,
"200-level subject" means a subject at second year level,
"300-level subject" means a subject at third year level,
"400-level subject" means a subject at fourth year level;

5.1.4 "credit points" means the value attributed to a subject as a component in a degree;

5.1.5 "academic adviser" means a person designated by the Academic Senate to advise a candidate proposing a course of study on the conformity of that course to these requirements;

5.1.6 "candidate" means a candidate for a degree of the University;

5.1.7 "full-time" candidate means a full-time candidate who is enrolled in any year in a subject or subjects with a value of not less than 36 credit points in courses for the degrees of Arts, Commerce or Science, or not less than the equivalent of three quarters of a year's programme in courses for the degrees of Engineering or Metallurgy;

5.1.8 "part-time" candidate means a candidate who is not designated as a full-time candidate.

CONFERRING OF DEGREES

6.1 The degrees or honours degrees of Bachelor, as prescribed by Requirements 4.1 and 4.2 of these Requirements, may be conferred by the Council on a candidate who has to the satisfaction of the Academic Senate, complied with these Requirements; provided that in no case shall any of the degrees referred to in Requirement 4 be conferred more than once on the same candidate.

6.2 The degree of Bachelor of Commerce may be conferred with merit where a candidate has demonstrated a standard of academic achievement approved by the Academic Senate.

6.3 Where a candidate has qualified more than once for the award of the same degree, the Registrar shall issue a certificate certifying to the fact and setting out the subjects and the grades awarded.

PART II -- GENERAL

ENROLMENT

7.1 A candidate qualified for candidature for the degree of Bachelor of Arts, Commerce, Engineering, Metallurgy or Science shall apply to the Registrar and be enrolled in the first and each subsequent year as a full-time or part-time student for one of the above degrees. Unless provided by these Requirements no candidate shall be enrolled for more than one degree in any one year except with the approval of the Academic Senate.

SCHEDULES OF SUBJECTS

8.1 The Academic Senate shall approve the subjects for the degrees in Arts, Commerce, Engineering, Metallurgy and Science. The subjects so approved shall be set out in schedules to these Requirements which shall include where relevant the credit points, subject pre-requisites, co-requisites, when offered and any restrictions or recommendations for each subject. The Schedules of Subjects are:

Arts and General Studies	-	Schedule A
Commerce	-	Schedule B
Engineering	-	Schedule C
Metallurgy	-	Schedule D
Science	-	Schedule E

COURSE OF STUDY

9.1 Subject to these Requirements a candidate shall, in each year, enrol in a course of study (selected from the Schedules of Subjects) which he shall propose after consultation with an academic adviser.

9.2 Except with the approval of the Adacemic Senate, in any year of enrolment a candidate shall not enrol in a subject or subjects with a value less than 12 credit points selected from the Schedules for the degrees of Arts, Commerce and Science, or less than the equivalent of one quarter of the course for a full-time year in the degrees of Engineering and Metallurgy. This requirement shall not apply when a candidate, in order to complete his degree, needs less than 12 credit points in subjects selected from the Schedules for the degrees of Arts, Commerce and Science, or less than one quarter of the course for a full-time year in the degrees of Engineering and Metallurgy; such a candidate must enrol for the amount of his

course needed to complete the degree.

9.3 Normally, in any year of enrolment a candidate shall not enrol in subjects with a value of more than 48 credit points in courses for the degrees of Arts, Commerce and Science or more than the equivalent of the programme for a full-time year in the courses for the degrees of Engineering and Metallurgy, except with the approval of the Academic Senate.

9.4 Except with the approval of the Academic Senate, a candidate may not enrol in a subject unless he satisfies the conditions for enrolment specified in the Schedules of Subjects.

CHANGE OF COURSE

10.1 Where a candidate seeks to change his course of study, enrolled in pursuant to Requirement 9.1, he shall apply in writing to the Registrar after consultation with an academic adviser.

10.2 Where the change of course referred to in Requirement 10.1 includes discontinuance of a subject or subjects, the candidate shall be deemed not to have been enrolled in the subject or subjects if he discontinues before the end of the fourth week of the session in which the subject or subjects commenced.

10.3 A candidate discontinuing a subject or subjects after the end of the fourth week of the session in which the subject commenced shall be recorded as discontinuing the subject or subjects as from the date of discontinuance; except that an assessment grade pursuant to Requirement 12.4 shall be determined by the relevant Departmental Chairman and entered on the record of a candidate who discontinues after the last day of classes as set out in the University Calendar for the appropriate session.

10.4 Where a date of discontinuance is recorded it shall be the date on which a notice of discontinuance on the prescribed form is lodged with the Registrar.

LEAVE OF ABSENCE

11. Subject to these Requirements a candidate may be granted leave of absence for up to one year by the Registrar on receipt of an application in writing; applications for leave of absence in excess of one year shall be determined by the Academic Senate.

ASSESSMENT

12.1 Subject to these Requirements, the declaration whether a candidate has completed satisfactorily a subject forming part of his course for the degree of Bachelor so as to gain the number of credit points specified in the Schedules of Subjects for the degrees of Arts, Commerce and Science, or standing in the subject for the degrees of Engineering and Metallurgy, shall be made by the Academic Senate.

12.2 In order to complete a subject satisfactorily and to gain the number of credit points specified for the subject in the Schedules for the degrees of Arts, Commerce and Science or standing in a subject prescribed for a degree in Engineering or Metallurgy, a candidate shall

12.2.1 attend such classes; and

12.2.2 complete such essays, exercises and practical work and present himself for such tests and examinations; and

12.2.3 reach a satisfactory standard in such completed work as may be determined by the relevant Departmental Chairman. Provided that a candidate whose performance was affected or was prevented by illness or other cause beyond his control from satisfying the requirements of this Requirement shall report the circumstances in writing (supported by evidence) to the Registrar who shall inform the Departmental Chairman; and the Departmental Chairman may take into account such illness or other cause when assessing the candidate's performance. The candidate shall submit such a report to the Registrar not later than seven days following the illness or other cause referred to above, except that it may be submitted by some other person if circumstances prevent the candidate from taking the required action.

12.3 The Academic Senate shall determine a period at the end of each session when examinations may be scheduled.

12.4 The Academic Senate shall determine the grades to be used for recording the level of achievement in a subject. The grade of achievement of a candidate in a subject shall be declared by the Academic Senate after advice from the relevant Departmental Chairman whose assessment shall be based on the candidate's level of performance with respect to Requirement 12.2.

MINIMUM RATE OF PROGRESS

13.1 The required minimum rate of progress in the degrees of Arts, Commerce and Science shall be the attainment of a number of credit points (excluding credit points granted pursuant to Requirement 15) aggregated as follows:

13.1.1 during the first two years of candidature, 48 credit points for full-time candidates and 24 credit points for part-time candidates, and

13.1.2 thereafter 32 credit points for each year of full-time candidature and 16 credit points for each year of part-time candidature.

13.2 The required minimum rate of progress in the degrees of Engineering or Metallurgy shall be the successful completion of subjects (excluding standing granted pursuant to Requirement 15) aggregated as follows:

13.2.1 during the first two years of candidature the first year of the course prescribed for full-time candidates, and the equivalent of half of the first year of the course prescribed for part-time candidates;

13.2.2 thereafter two thirds of the course prescribed for each year of candidature.

RESTRICTIONS ON ENROLMENT

14.1 Subject to these Requirements, a candidate who has failed to complete a subject satisfactorily after having enrolled therein twice may not enrol again in that subject except with permission of the Academic Senate.

14.2 Subject to these Requirements, a candidate who fails to maintain the required minimum rate of progress in a course of study set out in Requirement 13 may not enrol in any subject without showing cause to the satisfaction of the Academic Senate why enrolment should be permitted.

14.3 A candidate who, in the opinion of the Academic Senate has an unsatisfactory academic record in any other university or tertiary institution, shall not be permitted to enrol in any subject without the approval of the Academic Senate.

14.4 A candidate not permitted to enrol pursuant to this Requirement in a particular year may apply to the Academic Senate for permission to enrol in the following year.

14.5 Where a candidate required to show cause or to obtain the approval of the Academic Senate under this Requirement is permitted to enrol in any subject or subjects in the University, such enrolment shall be subject to any conditions imposed by the Academic Senate.

CREDIT TOWARDS DEGREE

15.1 A candidate who has completed in a university or other tertiary institution approved by the Academic Senate one or more subjects approved for the purpose of this Requirement by the Academic Senate may, subject to this Requirement, be granted such credit therefor as may be determined by the Academic Senate.

15.2 A candidate enrolled for a degree of Arts, Commerce or Science and granted credit pursuant to this Requirement shall in no case be eligible by reason thereof to be credited with more than 96 credit points, and shall in any case

15.2.1 complete such subjects as shall permit the obtaining of at least 24 credit points in 300-level subjects (selected from the Schedules of Subjects referred to in Requirement 8 of these Requirements) determined by the Academic Senate as providing a substantial and coherent study at the 300-level, and

15.2.2 complete such other subject or subjects as may be determined by the Academic Senate.

15.3 A candidate enrolled for a degree of Engineering or Metallurgy and granted credit pursuant to this Requirement shall in no case be eligible by reason thereof to be credited with more than two-thirds of the course and shall in any case

15.3.1 complete such subjects as shall permit the attaining of a satisfactory performance in at least three-quarters of the final year, or its part-time equivalent if a part-time candidate, of the prescribed course determined by the Academic Senate, and

15.3.2 complete such other subject or subjects as may be determined by the Academic Senate.

15.4 A candidate shall not be granted credit pursuant to this Requirement for subjects completed more than 10 years previously, except with the approval of the Academic Senate.

15.5 A candidate may, with the prior approval of the Academic Senate, be permitted to enrol for

subjects at another university or tertiary institution and on successful completion of the subjects to have them credited towards a degree of the University.

15.6 Notwithstanding anything to the contrary contained in this Requirement a candidate who is a graduate or who has satisfied the requirements for a degree or other award of a university or other tertiary institution approved by Academic Senate shall not be credited pursuant to this Requirement with more than 66 credit points in the case of degrees in Arts, Commerce and Science, except that appropriate subjects passed but not included in the previous degree may extend the maximum to 96 credit points; or one half of the prescribed course in the case of degrees in Engineering and Metallurgy, except that appropriate subjects passed but not included in the previous degree may extend the maximum to two-thirds of the prescribed course.

15.7 Save with the approval of the Academic Senate a candidate who has satisfactorily completed, either at the University or elsewhere, a subject which, in the opinion of the Academic Senate is a similar subject and for which credit has been obtained for a particular degree shall not be permitted to enrol in that subject for credit towards that particular degree.

PART III -- BACHELOR OF ARTS

DEGREE REQUIREMENTS

16. In order to complete a course of study which qualifies for the award of the degree of Bachelor of Arts, a candidate shall, subject to these Requirements, obtain from the successful completion of subjects listed in Schedule A, an aggregate of not less than 144 credit points of which

16.1 not less than 72 shall be obtained in respect of subjects other than 100-level subjects; and

16.2 not less than 24 shall be obtained in respect of 300-level subjects determined by the Academic Senate as providing a substantial and coherent study at the 300-level.

PART IV -- BACHELOR OF COMMERCE*

DEGREE REQUIREMENTS

17.1 In order to complete a course of study which qualifies for the award of the degree of Bachelor of Commerce, a candidate shall, subject to these Requirements, obtain an aggregate of not less than 144 credit points by the successful completion of subjects listed in Schedule A of which

17.1.1 not less than 72 shall be obtained in respect of subjects other than 100-level subjects; and

17.1.2 not less than 96 shall be in respect of subjects selected from Schedule B.

17.2 Of the 96 credit points specified in Requirement 17.1.2, 36 shall be obtained from the prescribed subjects in Schedule B-1.

17.3 Candidates enrolling for a specialisation in Accountancy shall obtain 60 credit points of the 96 specified in Requirement 17.1.2 from the prescribed subjects in Schedule B-2.

17.4 Candidates enrolling for a specialisation in Economics shall obtain 60 credit points of the 96 specified in Requirement 17.1.2 from the prescribed subjects in Schedule B-3.

17.5 With the approval of the relevant Departmental Chairman in either Accountancy or Economics a candidate may take 6 credit points of the 60 specified in Requirement 17.3 or 17.4 from Schedule A.

17.6 Of the 60 credit points specified in Requirements 17.3 and 17.4 not less than 24 shall be obtained in respect of 300-level subjects determined by the Academic Senate as providing a substantial and coherent study in subjects from the Department of Accountancy or the Department of Economics.

PART V -- BACHELOR OF ENGINEERING

DEGREE REQUIREMENTS

18. In order to complete a course of study which qualifies for the award of the degree of Bachelor of Engineering, a candidate shall, subject to these Requirements, successfully complete the subjects prescribed in one of the courses set out in Schedule C.

*Proposed amendments to the BCom requirements are being considered by Council. Students are advised to check with the Student Enquiries Office prior to enrolment.

PART VI -- BACHELOR OF METALLURGY

DEGREE REQUIREMENTS

19. In order to complete a course of study which qualifies for the award of the degree of Bachelor of Metallurgy, a candidate shall, subject to these Requirements, successfully complete the subjects set out in Schedule D.

PART VII -- BACHELOR OF SCIENCE*

DEGREE REQUIREMENTS

20. In order to complete a course of study which qualifies for the award of the degree of Bachelor of Science, a candidate shall, subject to these Requirements, obtain:

either

20.1 an aggregate of not less than 144 credit points by the successful completion of subjects listed in Schedule A of which not less than 108 shall be in respect of subjects selected from Schedule E1; further, of the 108 credit points, not less than 84 shall be in respect of subjects offered by a member department of the Faculty of Mathematics

or

20.2 an aggregate of not less than 144 credit points by the successful completion of subjects listed in Schedule A of which not less than 108 shall be in respect of subjects selected from Schedule E2; these 108 credit points shall

either

20.2.1 include at least 60 credit points in respect of subjects offered by one of the member departments of the Faculty of Science or other subjects specifically recommended by the Faculty of Science and approved by the Academic Senate for the purpose of this Requirement;

or

20.2.2 be gained from subjects offered by any two of the member departments of the Faculty of Science or other subjects specifically recommended by the Faculty of Science and approved by the Academic Senate for the purpose of this Requirement and consist of 54 credit points in respect of subjects offered by each of the two such member departments or other subjects specifically approved by the Academic Senate for the purpose of this Requirement.

20.3 Of the 144 credit points specified in Requirement 20.1 or 20.2,

20.3.1 not more than 60 credit points shall be in respect of 100-level subjects; and

20.3.2 not less than 36 credit points shall be in respect of 300-level subjects, of which at least 24 from Schedules E1 or E2 shall be approved by the Academic Senate as providing a substantial and coherent study at the 300-level;

or

20.3.3 where the 108 credit points referred to in Requirement 20.2 is made up from subjects offered by each of two member departments of the Faculty of Science or other subjects specifically approved by the Academic Senate for the purpose of Requirement 20.2.2, 24 of each of the 54 credit points shall be in respect of 300-level subjects and shall be approved by the Academic Senate as providing a substantial and coherent study at the 300-level.

PART VIII -- THE HONOURS DEGREE OF BACHELOR

PRELIMINARY

21. Subject to the succeeding Requirements, Requirements 1 to 20 inclusive of these Requirements shall, unless the context or subject matter indicate a contrary intention, have equal application to candidates for the honours degree of Bachelor as to candidates for the degree of Bachelor.

ADMISSION TO HONOURS DEGREE COURSES IN ARTS, COMMERCE AND SCIENCE

22. In order to be admitted as a candidate for the degree of Bachelor with Honours in Arts, Commerce or Science a candidate shall

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*A further requirement has been proposed as an addition to those shown under PART VII -- BACHELOR OF SCIENCE. Subsequent amendments to the other BSc requirements under PART VII are anticipated. Students are advised to contact the Student Enquiries Office prior to enrolment.

22.1 have (save as determined by the Academic Senate in exceptional cases) qualified for the award of a degree of Bachelor of Arts, Commerce or Science of the University; and

22.2 have attained in the subjects completed for his degree a standard of achievement approved by the Academic Senate;

22.3 have completed satisfactorily such subjects as may have been determined by the Academic Senate

or

22.4 hold from another University qualifications or academic attainments approved by the Academic Senate as equivalent to those set out in Requirements 22.1 and 22.2. Provided that the Academic Senate may require an applicant, before being admitted as a candidate for the honours degree of Bachelor, to complete such work and sit for such examinations as the Academic Senate may determine.

COURSE OF STUDY FOR THE HONOURS DEGREE COURSE IN ARTS, COMMERCE AND SCIENCE

23.1 A candidate for the degree of Bachelor with Honours in Arts, Commerce or Science shall obtain an aggregate of not less than 48 credit points from the successful completion of subjects approved by the Academic Senate from those listed in the Schedules of Subjects at a standard of achievement approved by the Academic Senate.

23.2 A candidate may be enrolled for

either

23.2.1 a single honours degree where subjects are taken from one department,

or

23.2.2 a joint honours degree where subjects are taken from more than one department.

LENGTH OF CANDIDATURE FOR HONOURS DEGREE COURSE IN ARTS, COMMERCE AND SCIENCE

24. Unless otherwise determined by the Academic Senate a full-time candidate shall pursue the course of study approved under Requirement 23 for two successive half-years and a part-time candidate shall pursue the course of study for four successive half-years. Provided that a candidate admitted pursuant to Requirement 22.4 may be required by the Academic Senate to pursue a course of study for more than two successive half-years if a full-time candidate and for more than four successive half-years if a part-time candidate.

ADMISSION, COURSE OF STUDY AND LENGTH OF CANDIDATURE FOR HONOURS DEGREE COURSES IN ENGINEERING AND METALLURGY

25. In order to complete a course of study which qualifies for the award of the degree of Bachelor with Honours in Engineering or Metallurgy, a candidate must complete the course for the degree of Bachelor of Engineering or Metallurgy at a standard of achievement determined by the Academic Senate.

ADDITIONAL HONOURS COURSE

26.1 A candidate who has qualified for the honours degree of Bachelor and who has fulfilled such requirements for admission to a second honours course as may be determined by the Academic Senate may be permitted by the Academic Senate to enrol for the second honours course provided that this course is, in the opinion of the Academic Senate, sufficiently different from the first honours course completed.

26.2 Unless otherwise determined by the Academic Senate a candidate permitted to undertake a second honours course pursuant to Requirement 26.1 shall comply with Requirements 23, 24 and 25 where relevant.

CLASSES OF HONOURS

27. A candidate who has satisfactorily fulfilled the Requirements prescribed may be awarded an honours degree in one of the following classes:

Honours Class I
Honours Class II Division 1
Honours Class II Division 2
Honours Class III

TERMINATION OF CANDIDATURE

28. Unless otherwise determined by the Academic Senate a candidate who, pursuant to these Requirements, fails to qualify for the award of any class of honours referred to in Requirement 27 may not continue as a candidate for the honours degree of Bachelor.

PART IX -- MISCELLANEOUS

GENERAL SAVING CLAUSE

29. Notwithstanding anything to the contrary herein contained the Academic Senate may, in any case in which it may deem it appropriate to do so, dispense with or suspend any requirement of or prescription by these Requirements. Any such action by the Academic Senate shall in every instance be reported to the Council at its next meeting.

APPLICATION OF AMENDING REQUIREMENTS

30. Where, after the commencement of these Requirements an amendment relating to the courses of study that may be taken by candidates for the pass degrees of Bachelor or the degrees with honours is made to these Requirements, the amendment does not apply to such a candidate who, before the making of the amendment, completed 12 credit points or the equivalent of one quarter of the course for a full-time year in the degrees of Engineering or Metallurgy, unless

30.1 the candidate elects that the amendment apply to him and submits to the Academic Senate proposed alterations to his course that are in accordance with these Requirements as amended by the amendment and the Academic Senate approved those alterations or

30.2 the Academic Senate otherwise determines.

APPEAL

31. A candidate may appeal against any decision made pursuant to these Requirements to the Academic Senate which may determine the matter as it sees fit.

PART X -- THE SCHEDULES

SCHEDULE A - *ARTS AND GENERAL STUDIES*

SCHEDULE B - *COMMERCE*

SCHEDULE C - *ENGINEERING*

SCHEDULE D - *METALLURGY*

SCHEDULE E - *SCIENCE*

All the subjects set out in the Schedules of Subjects are offered contingent upon the availability of staff and the level of student enrolments.

NOTE: A GUIDE TO THE SCHEDULES

Intending students are strongly urged to read the details of each subject in which they are interested. In particular, when selecting their programme of study they should ensure that they are complying with any special requirements concerning the subject or subjects which they wish to study beyond the first year (100-level).

The information in the columns headed "Pre-requisites" and "Co-requisites" indicates the minimum requirements to be met by students wishing to enrol in the various subjects. A pre-requisite subject is one which must be completed successfully prior to undertaking the subject for which it is prescribed. A co-requisite subject is one which must either be completed successfully before or be studied concurrently with the subject for which it is prescribed.

The pre- and co-requisites listed for subjects in the Schedules are described in terms of the current subject titles. Students who have completed similar subjects in previous years are advised to contact the appropriate Departmental Chairman to determine whether these subjects are acceptable as pre- or co-requisites for subjects in their present course.

Students or intending students, who feel that they have good grounds for requesting waiver of a pre-requisite or co-requisite should present their case to the appropriate Departmental Chairman.

Under the Requirements a Departmental Chairman may dispense with the need to comply with a pre-requisite or co-requisite. However, pre-requisites and co-requisites have been carefully determined and waiver will be allowed only in cases where the Departmental Chairman and the Academic Senate are satisfied that the student has a background of study sufficient to take the subject profitably.

In the column headed "Session Offered" the following coding is used:

1	=	first half-year
2	=	second half-year
3	=	full year

The University reserves the right to withdraw any subject or subjects at any time without notice.

Number	*Subject*	*Level*	*Credit Points*	*Session* Offered*	*Pre-Requisite*	*Co-Requisite*	*Remarks*
DEPARTMENT OF ACCOUNTANCY							FACULTY OF SOCIAL SCIENCES
100-Level							
ACCY100	Accounting & Financial Management IA	100	6	1			
ACCY110	Accounting & Financial Management IB	100	6	2	A. & F.M. IA		
ACCY160	Law in Society	100	6	1			
ACCY161	Business Law I	100	6	2	Law in Society		
200-Level							
ACCY214	Accounting & Financial Management IIA	200	8	1	A. & F.M. IB		
ACCY204	Accounting & Financial Management IIB	200	8	2	A. & F.M. IB		
ACCY212	Business Organisation and Policy	200	6	2	A. & F.M. IIA		
ACCY224	Business Finance	200	8	1	A. & F.M. IB		Recommended pre-requisite: ECON122 Quantitative Methods II or MATH102 Mathematics IB
ACCY234	Information Systems in Accounting	200	8	2	A. & F.M. IB		
ACCY254	Taxation Law	200	8	2	Law in Society		
ACCY262	Industrial Law*	200	6	1	Law in Society		
ACCY263	Administrative Law	200	6	2	Law in Society		Not to count with ACCY363 Administrative Law
ACCY264	Business Law II	200	8	1	Business Law I		
ACCY281	Government Accounting and Financial Management*	200	6	1	A. & F.M. IB		
ACCY282	Accounting for Selected Entities*	200	6	1	A. & F.M. IB		
300-Level							
ACCY302	Accounting & Financial Management IIIA	300	12	1	A. & F.M. IIB		
ACCY303	Selected Issues in Financial Accounting*	300	6	1	A. & F.M. IIB	A. & F.M. IIIA	

ACCY312	Accounting & Financial Management IIIB	300	12	2	A. & F.M. IIA		
ACCY313	Selected Issues in Management Accounting	300	6	2	A. & F.M. IIA	A. & F.M. IIIB	
ACCY322	Advanced Business Finance*	300	6	1	Business Finance		
ACCY332	Advanced Information Systems in Accounting	300	6	1	Information Systems in Accounting		
ACCY342	Advanced Auditing	300	6	1	A. & F.M. IIB		
ACCY352	Advanced Taxation Law*	300	6	1	Taxation Law		
ACCY363	Administrative Law	300	6	2	Law in Society		Not to count with ACCY263 Administrative Law
400-Level							
ACCY403	Accounting Theory**	400	8	1			Entry to the Honours course or honours subjects requires the approval of the Academic Senate on recommendation of the Chairman of the Department: normally the equivalent of a BCom degree with Merit is required for entry
ACCY404	Current Developments in Accounting Thought - Financial**	400	8	1			
ACCY413	Current Developments in Accounting Thought - Managerial**	400	8	1			
ACCY405	International Accounting#	400	8	2			
ACCY406	Issues in Financial Accounting and Reporting#	400	8	2			
ACCY414	Management Planning & Control#	400	8	2			
ACCY423	Investment Analysis and Management#	400	8	2			
ACCY453	Studies in Taxation#	400	8	2			
ACCY473	History and Development of Accounting Thought#	400	8	2			
ACCY483	Special Topic A#	400	8	1			
ACCY484	Special Topic B#	400	8	2			
ACCY493	Research Essay**	400	8	1,2 or 3			

* May not be offered in 1978
**Compulsory subjects
Optional subjects, two required

NOTE: The column headed "Session Offered" the following coding is used: 1 = first half-year; 2 = second half-year; 3 = full year

Number	*Subject*	*Level*	*Credit Points*	*Session Offered*	*Pre-Requisite*	*Co-Requisite*	*Remarks*
DEPARTMENT OF BIOLOGY							FACULTY OF SCIENCE
100-Level							
BIOL101	General and Human Biology	100	12	3			2 Unit Science course of N.S.W. H.S.C. recommended
200-Level							
CHEM213	Physical Chemistry II	200	6	1	CHEM102		
ELEC294	Introductory Systems Theory	200	6	2	MATH101		This subject is required for a major sequence in Biology
GEOG291	Biogeography (Science)	200	6	1	BIOL101 or GEOG111		
BIOL201	Bioenergetics I* (Metabolism)	200	8	2	BIOL211		Not to count with BIOL301 CHEM213 recommended
BIOL202	Bioenergetics II* (Cell Physiology)	200	8	2	BIOL211		Not to count with BIOL302 CHEM213 recommended
BIOL203	Bioenergetics III* (Physiology)	200	8	1	BIOL101 and normally BIOL201, BIOL202		Not to count with BIOL303
BIOL204	Bioenergetics IV* (Ecology)	200	8	2	BIOL101 or GEOG291. Normally BIOL201, 202, 203		Not to count with BIOL304
BIOL211	Introductory Biochemistry	200	6	1	BIOL101, CHEM101, 102		
BIOL281	Evolution and Ecology of Man	200	6	2	48 credit points		Not to count with BIOL381
300-Level							
BIOL301	Bioenergetics I* (Metabolism)	300	8	2	BIOL211		Not to count with BIOL201 CHEM213 recommended
BIOL302	Bioenergetics II* (Cell Physiology)	300	8	2	BIOL211		Not to count with BIOL202 CHEM213 recommended
BIOL303	Bioenergetics III* (Physiology)	300	8	1	BIOL101 and normally BIOL201, BIOL202		Not to count with BIOL203
BIOL304	Bioenergetics IV* (Ecology)	300	8	2	BIOL101 or GEOG291. Normally BIOL201, 202, 303		Not to count with BIOL204
BIOL381	Evolution and Ecology of Man	300	6	2	48 credit points		Not to count with BIOL281
BIOL391	Advanced Biology	300	16	2	36 credit points of Biology subjects		Restricted intake. Admission by application to Chairman of the Department of Biology

MATH334	Design and Analysis	300	6	3	*Either* PSYC232 *or* MATH234 *or* MATH233	Not to count with PSYC333
400-Level						
BIOL401	Biology Honours	400	48	3	Passing a major Biology sequence to 300-level at a standard approved by the Chairman of the Department of Biology	

*Bioenergetics I-IV should be taken in the order stated unless special permission is obtained from the Chairman of the Department of Biology. The subjects Bioenergetics I-IV can also be taken individually, subject to approval from the Chairman of the Department of Biology.

DEPARTMENT OF CHEMISTRY — FACULTY OF SCIENCE

100-Level						
CHEM101	Chemistry IA: Intro. Physical & General Chemistry	100	6	1		Completion of at least a 2 Unit Science course at N.S.W. H.S.C. recommended
CHEM102	Chemistry IB: Intro. Organic & Physical Chemistry	100	6	2		
200-Level						
CHEM211	Inorganic Chemistry II	200	6	2	Chemistry IA & IB	May not be counted with CHEM201
CHEM212	Organic Chemistry II	200	6	1	Chemistry IA & IB	May not be counted with CHEM202
CHEM213	Physical Chemistry II	200	6	1	Chemistry IA & IB	May not be counted with CHEM203, or 204 or 206
CHEM214	Analytical Chemistry II	200	6	2	Chemistry IA & IB	May not be counted with CHEM301 or 206
CHEM219	The Computer in Science	200	6	3	Any 100-level subjects offered by the Faculties of Science or Mathematics	

Number	Subject	Level	Credit Points	Session Offered	Pre-Requisite	Co-Requisite	Remarks
300-Level							
CHEM314	Analytical Chemistry III	300	8	2	Analytical Chemistry II		May not be counted with CHEM302
CHEM311	Inorganic Chemistry III	300	8	1	Inorganic Chemistry II		May not be counted with CHEM303
CHEM312	Organic Chemistry III	300	16	3	Organic Chemistry II		May not be counted with any or all of CHEM304, 305, 308
CHEM323	Physical Chemistry III	300	8	1	CHEM213 or CHEM203 or CHEM204		May not be counted with any or all of CHEM306, 307, 313
CHEM324	Theoretical Chemistry	300	8	2	CHEM213 or CHEM203		May not be counted with any or all of CHEM306, 308, 313
400-Level							
CHEM411	Selected Topics in Chemistry	400	16	3	24 credit points gained from 300-level Chemistry subjects		Entry to the Honours year shall be determined by the Academic Senate on the advice of the Departmental Chairman
CHEM420	Chemistry Honours Project	400	32	3	24 credit points gained from 300-level Chemistry subjects	CHEM411	

DEPARTMENT OF CIVIL ENGINEERING — FACULTY OF ENGINEERING

100-Level					
CIVL112	Building	100	6	1	
CIVL113	Public Works and Construction	100	6	2	
CIVL114	Surveying	100	6	1	Course will include a project
CIVL115	Photo-interpretation and Measurement	100	6	2	Course will include a project
CIVL116	The Built Environment	100	6	3	

100-Level					
ECON101	Economics I	100	6	1	Recommended 2 Unit Mathematics at N.S.W. H.S.C.
ECON111	Economics II	100	6	2	
ECON121	Quantitative Methods I	100	6	1	Recommended 2 Unit Mathematics at N.S.W. H.S.C.
ECON122	Quantitative Methods II	100	6	2	
200-Level					
ECON205	Macroeconomics	200	8	1	Not to count with ECON203
ECON206	Public Finance	200	8	2	Not to count with ECON204
ECON215	Microeconomics	200	8	1	Not to count with ECON213
ECON216	International Economics	200	8	2	Not to count with ECON214
ECON223	Quantitative Methods III	200	8	1	Not to count with ECON221
ECON224	Quantitative Methods IV	200	8	2	Not to count with ECON222
					It is recommended that units at any level should be attempted only after completion of corresponding units at the previous level.
300-Level					
ECON302	Comparative Economic Systems*	300	8	-	
ECON303	Economic Development Issues	300	8	2	
ECON304	Economic Policy	300	8	1	
ECON305	Economic Development Planning	300	8	1	
ECON306	International Trade	300	8	2	
ECON307	International Monetary Economics	300	8	2	
ECON311	Natural Resource Economics	300	8	1	
ECON312	Industrial Economics	300	8	2	
ECON313	Transport Economics	300	8	2	Not to count with Geography of Transport Systems
ECON314	Urban & Regional Economics*	300	8	-	

*These subjects will not be offered in 1978

Number	*Subject*	*Level*	*Credit Points*	*Session Offered*	*Pre-Requisite*	*Co-Requisite*	*Remarks*
ECON315	Microeconomics - Theory and Application	300	8	1			
ECON316	History of Economic Thought	300	8	2			
ECON321	Econometrics	300	8	1			
ECON322	Mathematical Economics	300	8	1			
ECON323	Econometric Models	300	8	2			
400-Level							
ECON431	Advanced Economic Analysis	400	30	3			Entry to the Honours year or honours subjects shall be determined by the Academic Senate on the advice of the Departmental Chairman
ECON441	Honours Thesis	400	18	3			

DEPARTMENT OF EDUCATION — FACULTY OF SOCIAL SCIENCES

200-Level							
EDUC211	Educational Psychology and Educational Research	200	8	3	36 Credit Points		
EDUC212	Educational Sociology and Philosophy in Education	200	8	3	36 Credit Points		
300-Level							
EDUC311	Developmental Principles in Education	300	8	3	EDUC211 and 212		No more than three 300-level subjects to count towards a degree
EDUC312	Comparative Education	300	8	3	EDUC211 and 212		
EDUC313	History of Education	300	8	3	EDUC211 and 212		
EDUC314	Educational Research Methodology	300	8	3	EDUC211 and 212		
EDUC315	Philosophy in Education	300	8	3	EDUC211 and 212		

400-Level

EDUC401	Education IV	400	48	3	24 Credit Points of 300-level Education at credit level or better		Entry to the Honours year shall be determined by the Academic Senate on the advice of the Departmental Chairman

DEPARTMENT OF ELECTRICAL ENGINEERING — FACULTY OF ENGINEERING

100-Level

ELEC101	Electrical Engineering 1	100	6	3		PHYS142	
ELEC191	Computers 1S	100	6	2			

200-Level

ELEC291	Applied Electricity 1	200	8	3	PHYS142		
ELEC292	Applied Electricity 2	200	8	3		ELEC291	
ELEC293	Computers 1M	200	6	3			Not to count with ELEC295 Computers 2S
ELEC294	Introductory Systems Theory	200	6	2			
ELEC295	Computers 2S	200	6	1			Not to count with ELEC293 Computers 1M

300-Level

ELEC391	Computers 3S	300	6	1	ELEC295		
ELEC392	Computers 4S	300	6	2	ELEC391		

Number	*Subject*	*Level*	*Credit Points*	*Session Offered*	*Pre-Requisite*	*Co-Requisite*	*Remarks*
DEPARTMENT OF ENGLISH							FACULTY OF HUMANITIES
100-Level							
ENGL101	Introduction to Modern Literature	100	12	3			A comprehensive course of study in English comprises not less than 60 credit points taken from English 100-, 200- and 300-level subjects
ENGL103	Introduction to English Language Studies A	100	6	1			
ENGL104	Introduction to English Language Studies B	100	6	2	ENGL103		
200-Level							
ENGL220	Utopian and Anti-Utopian Literature	200	6	1	ENGL101 *or* ENGL103 and 104		Students without ENGL101 may be admitted to subjects in English Literature 200-level subject to approval by the Departmental Chairman
ENGL221	Romantic Poetry	200	6	2	ENGL101 *or* ENGL103 and 104		
ENGL222	Australian Literature	200	6	2	ENGL101 *or* ENGL103 and 104		
ENGL223	Old English	200	12	3	ENGL103 and 104		
ENGL224	Middle English	200	12	3	ENGL103 and 104		
ENGL225	Eighteenth Century Literature	200	6	1	ENGL101 *or* ENGL103 and 104		
ENGL226	Nineteenth Century Fiction	200	6	2	ENGL101 *or* ENGL103 and 104		
300-Level							
ENGL312	Shakespeare and His Contemporaries	300	6	1	ENGL101 *or* ENGL103 and 104		Students without ENGL101 or 103 *and* 104 or English 200-level pre-requisites may be admitted to subjects in English 300-level subject to approval by the Departmental Chairman
ENGL313	Restoration and Augustan Literature	300	6	2	ENGL101 *or* ENGL103 and 104		
ENGL314	Australian Fiction to 1920	300	6	1	ENGL101 *or* ENGL103 and 104		
ENGL315	The Metaphysical Poets and Milton	300	6	1	ENGL101 *or* ENGL103 and 104		
ENGL316	Advanced Old English	300	6	1	ENGL223		
ENGL317	Medieval Romance in England	300	6	1	ENGL224		
ENGL318	Old and Middle English Lyric	300	6	2	ENGL223 *or* ENGL316 and ENGL224 *or* ENGL317		
ENGL319	Medieval Drama in England	300	6	2	ENGL101 *or* ENGL103 and 104		

400-Level

ENGL400	English IV Honours	400	48	3	Entry to the Honours year shall be determined by the Academic Senate on the advice of the Departmental Chairman	

DEPARTMENT OF EUROPEAN LANGUAGES — FACULTY OF HUMANITIES

FRENCH

100-Level

EURO103	Introductory French	100	12	3		For beginners or near-beginners
EURO111	French IA	100	6	1		Recommended pre-requisite: prior study of French to an acceptable level*
EURO112	French IB	100	6	2	French IA	

200-Level

EURO201	French IIC	200	8	1	French 103	
EURO202	French IID	200	8	2	French IIC	
EURO211	French IIA	200	8	1	French 112	
EURO212	French IIB	200	8	2	French IIA	

300-Level

EURO311	French IIIA	300	12	1	French 222	
EURO312	French IIIB	300	12	2	French IIIA	

400-Level

EURO400	French IV Honours	400	48	3		Entry to the Honours year shall be determined by the Academic Senate on the advice of the Departmental Chairman

*This will be determined by the Chairman of the Department: normally an acceptable level will be French level 2 or 2 unit course at N.S.W. H.S.C.

Number	*Subject*	*Level*	*Credit Points*	*Session Offered*	*Pre-Requisite*	*Co-Requisite*	*Remarks*
ITALIAN							
100-Level							
EURO153	Introductory Italian	100	12	3			For beginners or near-beginners. Not to count with ITAL103
EURO161	Italian IA	100	6	1			Recommended pre-requisite: prior study of Italian to an acceptable level*
EURO162	Italian IB	100	6	2	Italian IA		
200-Level							
EURO251	Italian IIC	200	8	1	Introductory Italian 103		
EURO252	Italian IID	200	8	2	Italian IIC		

*This will be determined by the Chairman of the Department: normally an acceptable level will be Italian level 2 or Italian 2 unit course at N.S.W. H.S.C., or attending school in Italy

GENERAL STUDIES							
100-Level							
GENE102	Industrial Relations A: Wage Determination in Australia	100	6	2			
200-Level							
GENE203	The World of Language A	200	8	1	24 Credit Points		
GENE204	The World of Language B	200	8	2	24 Credit Points		
GENE213	Women in Society A	200	8	1	24 Credit Points		
GENE214	Women in Society B	200	8	2	24 Credit Points		
GENE220	Concepts of the Modern Universe	200	6	1	24 Credit Points		
GENE221	Science, Technology and Social Progress	200	8	2	24 Credit Points		

GENE231	Religious Studies A	200	8	1	24 Credit Points	
GENE232	Religious Studies B	200	8	2	24 Credit Points	

DEPARTMENT OF GEOGRAPHY — FACULTY OF SOCIAL SCIENCES

100-Level

GEOG102	The Human Environment	100	6	1		
GEOG112	The Physical Environment	100	6	2		
GEOG192	The Physical Environment (Science)	100	6	2		Not to count with GEOG111 Intro. Physical Geography

200-Level

GEOG202	Urban Location & Structure	200	8	2	Normally GEOG101	
GEOG204	Population Geography	200	8	1	Normally GEOG101	
GEOG206	Arid Landscapes	200	8	2	Normally GEOG111	
GEOG210	South & S.E. Asia	200	8	1	Normally GEOG101	
GEOG212	Biogeography	200	8	1	GEOG111 or BIOL101	
GEOG291	Biogeography (Science)	200	6	1	GEOG191 or BIOL101	Not to count with GEOG212

300-Level

GEOG301	Geography of Transport Systems	300	12	2	GEOG101 and either GEOG202 or 200-level Economics	Not to count with Transport Economics
GEOG303	Advanced Population Geography	300	12	1	Normally GEOG101 and GEOG202	Not to count with GEOG204
GEOG305	Regional Planning & Development	300	12	1	GEOG101 and either GEOG202 or 200-level Economics	
GEOG307	Agricultural Geography	300	12	2	Normally GEOG101 and 8 credit points of 200-level Geography	
GEOG311	Fluvial Geomorphology	300	12	2	Normally GEOG111 and either GEOG206, GEOG212 or 6 credit points of 200-level Geology	
GEOG313	Coastal Geomorphology	300	12	1	Normally GEOG111 and either GEOG206, GEOG212 or 6 credit points of 200-level Geology	

Number	*Subject*	*Level*	*Credit Points*	*Session Offered*	*Pre-Requisite*	*Co-Requisite*	*Remarks*
GEOG315	South & S.E. Asia (Advanced)	300	12	1	Normally 8 credit points of 200-level Geography		Not to count with GEOG210
GEOG391	Fluvial Geomorphology (Science)	300	12	2	Normally GEOG291 or 6 credit points of 200-level Geology		Not to count with GEOG311
GEOG393	Coastal Geomorphology (Science)	300	12	1	Normally GEOG291 or 6 credit points of 200-level Geology		Not to count with GEOG313
400-Level							
GEOG402	Geography IV Honours	400	48	3			Entry to the Honours year shall be determined by the Academic Senate on the advice of the Departmental Chairman

DEPARTMENT OF GEOLOGY — FACULTY OF SCIENCE

100-Level							
GEOL101	Introductory Geology, Crystallography, Mineralogy, Petrology	100	6	1			Not to count with GEOL111, GEOL214, GEOL251
GEOL102	Physical Geology, Palaeontology and Stratigraphy, Mapping	100	6	2			Not to count with GEOL112, not normally with GEOL351
GEOL111	Geology, Resources and the Environment I	100	6	1			Not to count with GEOL101, GEOL214, GEOL251
GEOL112	Geology, Resources and the Environment II	100	6	2			Not to count with GEOL102, not normally with GEOL351
200-Level							
GEOL201	Crystallography, Crystal Chemistry and Mineralogy	200	6	1	GEOL101, GEOL102		Pre-requisite for many other Geology subjects. Not to count with GEOL351
GEOL202	Igneous and Metamorphic Petrology	200	6	2	GEOL201		
GEOL203	Principles of Geological Mapping	200	6	2	For Engineering students only, GEOL351	GEOL202 or GEOL205 or GEOL305	

GEOL204	Palaeontology	200	6	2	GEOL101, GEOL102		Not to count with GEOL304
GEOL205	Sedimentology	200	6	2	GEOL201		Not to count with GEOL305
GEOL206	Stratigraphy and Stratigraphic Palaeontology*	200	6	1		GEOL204	Not to count with GEOL306
GEOL207	Geophysics	200	6	2	GEOL101 and GEOL102; *or* GEOL251		Not to count with GEOL307. Normally taken as a 300-level subject
GEOL208	Structural Geology and Geotectonics	200	6	1		GEOL201 or GEOL351	Not to count with GEOL308
GEOL210	Micropalaeontology	200	6	1	GEOL204		Not to count with GEOL310
GEOL211	Basin Analysis and Oceanography	200	6	1	GEOL101 and GEOL102; *or* GEOG111 and either GEOG212 or GEOG291		Not to count with GEOL311. Not offered in 1978
GEOL212	Fossil and Nuclear Fuels	200	6	1	GEOL101 and GEOL102; *or* GEOL251		Not to count with GEOL312
GEOL213	Economic Geology and Exploration Geochemistry*	200	6	2	GEOL201 or GEOL351		Not to count with GEOL313
300-Level							
GEOL301	Advanced Crystallography, Crystal Chemistry and Mineralogy*	300	6	1	GEOL201		
GEOL302	Advanced Igneous and Metamorphic Petrology	300	6	1	GEOL202		Usually offered in session 2. Completion of GEOL301 is desirable
GEOL303	Advanced Geological Mapping and Geomorphology	300	6	1	GEOL203		
GEOL304	Palaeontology	300	6	2	Four 200-level Geology subjects		Not to count with GEOL204
GEOL305	Sedimentology	300	6	2	GEOL201 plus three other 200-level Geology subjects		Not to count with GEOL205
GEOL306	Stratigraphy and Stratigraphic Palaeontology*	300	6	1	Normally four 200-level Geology subjects	GEOL204 or GEOL304	Not to count with GEOL206
GEOL307	Geophysics	300	6	2	Four 200-level Geology subjects		Not to count with GEOL207
GEOL308	Structural Geology and Geotectonics	300	6	1	Normally four 200-level Geology subjects	GEOL201	Not to count with GEOL208
GEOL309	Mathematical Methods in Geology*	300	6	1	Four 200-level Geology subjects		

*May not be offered in 1978

Number	*Subject*	*Level*	*Credit Points*	*Session Offered*	*Pre-Requisite*	*Co-Requisite*	*Remarks*
GEOL310	Micropalaeontology	300	6	1	GEOL304; *or* GEOL204 and three other 200-level Geology subjects		Not to count with GEOL210
GEOL311	Basin Analysis and Oceanography	300	6	1	Four 200-level Geology subjects		Not to count with GEOL211. Not offered in 1978
GEOL312	Fossil and Nuclear Fuels	300	6	1	Four 200-level Geology subjects		Not to count with GEOL212
GEOL313	Economic Geology and Exploration Geochemistry*	300	6	2	GEOL201 plus three other 200-level Geology subjects		Not to count with GEOL213
GEOL351	Geology for Mining Engineers II	300	8	1	GEOL251		Not to count with GEOL201
400-Level							
GEOL401	Geology Honours	400	48	3	At least four 200-level and normally eight 300-level Geology subjects together with requirements for the award of the BSc degree		

*May not be offered in 1978

DEPARTMENT OF HISTORY — FACULTY OF HUMANITIES

100-Level							
HIST102	English Social History, 1815-1945	100	12	3			
200-Level							
HIST221	Australian Social History 1850-1930 A	200	16	3	HIST101 - English Social History, 1750-1940 or HIST102		Not to count with HIST310 - Australian Social History, 1850-1930 B
HIST222	French History 1700-1940 A	200	16	3	HIST101 - English Social History 1750-1940 or HIST102		Not to count with HIST311 - French History, 1700-1940 B
HIST223	Religion and Society in Britain from the Reformation A	200	16	3	HIST101 - English Social History, 1750-1940 or HIST102		Not to count with HIST226, 227, 316 or 313
HIST224	Modern South-east Asian History A*	200	16	3	HIST101 - English Social History, 1750-1940 or HIST102		Not to count with HIST312 - Modern South-east Asian History B

HIST225	Australian Social History Since the Depression A*	200	16	3	HIST101 - English Social History, 1750-1940 or HIST102	Not to count with HIST314 - Australian Social History Since the Depression B
HIST227	Religion and Society in Britain, 1738-1860 A	200	8	2	HIST226 - Reformation and Revolution, 1517-1660 A	Not to count with HIST317 - Religion and Society in Britain, 1738-1860 B
HIST228	English History, 1865-1945 A*	200	16	3	HIST102 or HIST101 or equivalent	Not to count with HIST318
HIST231	Russia, the Soviet Union and International Communism 1885-1962 A	200	16	3	HIST102 or HIST101 or equivalent	Not to count with HIST220, HIST309 or HIST321
300-Level						
HIST310	Australian Social History, 1850-1930 B	300	24	3	Any 200-level History subject *except* HIST221 - Australian Social History 1850-1930 A	Not to count with HIST221 - Australian Social History, 1850-1930 A
HIST311	French History, 1700-1940 B	300	24	3	Any 200-level History subject *except* HIST222 - French History, 1700-1940 A	Not to count with HIST222 - French History, 1700-1940 A
HIST312	Modern South-east Asian History B	300	24	3	Any 200-level History subject *except* HIST224 - Modern South-east Asian History A	Not to count with HIST224 - Modern South-east Asian History A
HIST313	Religion and Society in Britain from the Reformation B	300	24	3	Any 200-level History subject *except* HIST223 or HIST226	Not to count with HIST223, HIST226, HIST316 or HIST317
HIST314	Australian Social History Since the Depression B*	300	24	3	Any 200-level History subject *except* HIST225 - Australian Social History Since the Depression A	Not to count with HIST225 - Australian Social History Since the Depression A
HIST317	Religion and Society in Britain, 1738-1860 B	300	12	2	HIST316 - Reformation and Revolution, 1517-1660 B	Not to count with HIST227 - Religion and Society in Britain, 1738-1860 A
HIST318	English History 1865-1945 B	300	24	3	Any 200-level History subject *except* HIST228	Not to count with HIST228
HIST319	Modern Indonesian and Malaysian History B	300	12	1	Any 200-level History subject *except* HIST224	Not to count with HIST224 or HIST312
HIST320	History of Modern Mainland South-east Asia B*	300	12	2	HIST319 - Modern Indonesian and Malaysian History B	Not to count with HIST224 or HIST312
HIST321	Russia, the Soviet Union and International Communism 1885 - 1962 B	300	24	3	Any 200-level History subject *except* HIST220 or HIST231	Not to count with HIST220, HIST231 or HIST309

*Not being offered in 1978

Number	*Subject*	*Level*	*Credit Points*	*Session Offered*	*Pre-Requisite*	*Co-Requisite*	*Remarks*
400-Level							
HIST401	History Honours	400	48	3			Entry to the Honours year shall be determined by the Academic Senate on the advice of the Departmental Chairman

DEPARTMENT OF HISTORY AND PHILOSOPHY OF SCIENCE — FACULTY OF HUMANITIES

100-Level							
HPS131	Greek Science A	100	12	3			
HPS130	The Scientific Revolution and the Seventeenth Century A	100	12	3			
200-Level							
HPS231	Greek Science B	200	16	3	HPS130 The Scientific Revolution and the Seventeenth Century A		Not to count with either HPS110 Greek Science or HPS131 Greek Science A
HPS230	The Scientific Revolution and the Seventeenth Century B	200	16	3	HPS131 Greek Science A		Not to count with HPS130 The Scientific Revolution and the Seventeenth Century A
HPS232	The Darwinian Revolution A	200	16	3	HPS130 The Scientific Revolution and the Seventeenth Century A or HPS230 The Scientific Revolution and the Seventeenth Century B		
HPS213	Science and Society 1A	200	8	1	HPS131 Greek Science A or HPS130 The Scientific Revolution and the Seventeenth Century A		
HPS223	Science and Society 2A	200	8	2	HPS131 Greek Science A or HPS130 The Scientific Revolution and the Seventeenth Century A		

300-Level

HPS332	The Darwinian Revolution B	300	24	3	HPS130 The Scientific Revolution and the Seventeenth Century A or HPS230 The Scientific Revolution and the Seventeenth Century B	Not to count with either HPS210 The Darwinian Revolution A or HPS232 The Darwinian Revolution A
HPS314	Philosophical and Ideological Perspectives of Science 1B	300	12	1	One 100-level and one 200-level subject offered by the Department, to include *either* HPS130 The Scientific Revolution and the Seventeenth Century A *or* HPS230 The Scientific Revolution and the Seventeenth Century B	Not to count with either HPS251 Philosophical and Ideological Perspectives of Science 1A or HPS214 Philosophical and Ideological Perspectives of Science 1A
HPS324	Philosophical and Ideological Perspectives of Science 2B	300	12	1	HPS314 Philosophical and Ideological Perspectives of Science 1B	Not to count with HPS252 Philosophical and Ideological Perspectives of Science 2A or HPS224 Philosophical and Ideological Perspectives of Science 2A
HPS313	Science and Society 1B	300	12	1	HPS131 Greek Science A or HPS130 The Scientific Revolution and the Seventeenth Century A	Not to count with HPS213 Science and Society 1A or HPS220 Science and Society A
HPS323	Science and Society 2B	300	12	2	HPS131 Greek Science A or HPS130 The Scientific Revolution and the Seventeenth Century A	Not to count with HPS223 Science and Society 2A or HPS220 Science and Society A

400-Level

HPS400	History and Philosophy of Science IV	400	48	3	Entry to the Honours year shall be determined by the Academic Senate on the advice of the Departmental Chairman	

Number	*Subject*	*Level*	*Credit Points*	*Session Offered*	*Pre-Requisite*	*Co-Requisite*	*Remarks*
DEPARTMENT OF MATHEMATICS							FACULTY OF MATHEMATICS
100-Level							
MATH101	Mathematics IA	100	12	3	One of the following HSC categories; either: (i) 2 unit: 2nd grade or higher, provided the student has a suitable aggregate score, or on the recommendation of the relevant high school principal; or (ii) 3 unit: 4th grade or higher; or (iii) 4 unit: either (a) 4th grade or higher, or (b) 5th grade, provided the student has a suitable aggregate score, or on the recommendation of the relevant high school principal.		Assumed knowledge is the 3 unit H.S.C. course. Students who do not meet the requirements of the pre-requisite, and still wish to do Mathematics IA, may attempt a special entry examination offered by the Chairman of the Department of Mathematics.
MATH102	Mathematics IB	100	12	3		MATH101 Mathematics IA	Not to count with MATH233 Mathematics IIP or MATH202 Mathematics IIS or MATH281 Mathematics IIE or MATH282 Mathematics IIM
CSCI101	Computing Science I	100	12	3			Not to count with MATH145 Computing Science I
200-Level							
MATH201	Mathematics IIA	200	12	3	MATH101 Mathematics IA		Not to count with MATH284 Mathematics IIA/part 1 or MATH285 Mathematics IIA/part 2 or MATH281 Mathematics IIE or MATH282 Mathematics IIM
MATH211	Mathematics IIB	200	12	3		MATH201 Mathematics IIA	Not to count with MATH281 Mathematics IIE or MATH282 Mathematics IIM or MATH202 Mathematics IIS

MATH202	Mathematics IIS	200	6	3		MATH201 Mathematics IIA	Not to count with MATH102 Mathematics IB or MATH211 Mathematics IIB or MATH221 Mathematics IIC or MATH281 Mathematics IIE or MATH282 Mathematics IIM
MATH221	Mathematics IIC	200	12	3	MATH101 Mathematics IA and MATH102 Mathematics IB		Not to count with MATH202 Mathematics IIS or MATH281 Mathematics IIE or MATH282 Mathematics IIM
MATH231	Mathematics IID	200	12	3	MATH101 Mathematics IA and MATH102 Mathematics IB		Not to count with MATH233 Mathematics IIP or MATH281 Mathematics IIE or MATH282 Mathematics IIM
MATH233	Mathematics IIP	200	6	3	MATH101 Mathematics IA		Not to count with MATH102 Mathematics IB or MATH231 Mathematics IID
MATH234	Statistical Methods	200	6	3			Not to count with MATH102 Mathematics IB or MATH231 Mathematics IID or MATH233 Mathematics IIP or MATH331 Mathematics IIIG or PSYC232 Research Methods and Statistics or PSYC101 Psychology IA or PSYC102 Psychology IB
CSCI201	Computing Science II	200	12	3	MATH145 Computing Science I		Not to count with MATH241 Computing Science II
CSCI241	Computing Methods	200	6	3			Not to count with MATH145 Computing Science I or CSCI101 Computing Science I or MATH241 Computing Science II or CSCI201 Computing Science II or CSCI301 Computing Science IIIA or CSCI302 Computing Science IIIB
300-Level							
MATH301	Mathematics IIIA	300	12	3	MATH201 Mathematics IIA and either MATH211 Mathematics IIB or MATH202 Mathematics IIS		Not to count with MATH351 Ocean Dynamics
MATH302	Mathematics IIIB	300	12	3	MATH201 Mathematics IIA and any one of MATH211 Mathematics IIB or MATH202 Mathematics IIS or MATH221 Mathematics IIC		

Number	*Subject*	*Level*	*Credit Points*	*Session Offered*	*Pre-Requisite*	*Co-Requisite*	*Remarks*
MATH303	Mathematics IIIC	300	12	3	MATH201 Mathematics IIA and any one of MATH211 Mathematics IIB or MATH202 Mathematics IIS or MATH221 Mathematics IIC		
MATH311	Mathematics IIID	300	12	3	MATH211 Mathematics IIB	MATH301 Mathematics IIIA	Not to count with MATH351 Ocean Dynamics
MATH321	Mathematics IIIE	300	12	3	MATH102 Mathematics IB and any one of MATH201 Mathematics IIA or MATH211 Mathematics IIB or MATH221 Mathematics IIC or MATH231 Mathematics IID		
MATH322	Mathematics IIIF	300	12	3	MATH201 Mathematics IIA and MATH221 Mathematics IIC		
MATH331	Mathematics IIIG	300	12	3	MATH231 Mathematics IID		
MATH334	Design and Analysis	300	6	3	Either PSYC232 Research Methods and Statistics or MATH234 Statistical Methods or MATH233 Mathematics IIP		Not to count with PSYC333 Design and Analysis
MATH351	Ocean Dynamics	300	12	3	MATH201 Mathematics IIA and MATH211 Mathematics IIB		Not to count with MATH301 Mathematics IIIA or MATH311 Mathematics IIID
CSCI301	Computing Science IIIA	300	12	3	MATH241 Computing Science II		
CSCI302	Computing Science IIIB	300	12	3	MATH241 Computing Science II		
400-Level							
MATH401	Mathematics IV (Honours)	400	48	3	Entry to Honours year or Honours subject shall be determined by the Academic Senate on the advice of the Departmental Chairman		
MATH411	Mathematics Honours Seminar	400	12	3	Candidature for MSc or DipMath		

DEPARTMENT OF MECHANICAL ENGINEERING — FACULTY OF ENGINEERING

The Department of Mechanical Engineering does not offer subjects for inclusion in Schedule A.

DEPARTMENT OF METALLURGY — FACULTY OF ENGINEERING

100-Level

METL121	Nature of Materials	100	6	2		

DEPARTMENT OF PHILOSOPHY — FACULTY OF HUMANITIES

100-Level

PHIL103	Philosophy 103	100	12	3		Not to count with PHIL133 or, for students enrolled prior to 1978, PHIL113
PHIL112	Logic A	100	6	2		Not to count with PHIL153 or, for students enrolled prior to 1978, with PHIL103 or PHIL123
PHIL123	Philosophy 123	100	12	3		Not to count with PHIL223
PHIL143	Political Theory	100	12	3		
PHIL153	Clear Thinking and Arguments	100	12	3		Not to count with PHIL112 or PHIL113

200-Level

PHIL251	Ethics A	200	8	1	At least 8 credit points in Philosophy	Not to count with PHIL201 or PHIL301
PHIL252	Aesthetics A	200	8	2	At least 8 credit points in Philosophy or English or European Languages	Not to count with PHIL202 or PHIL302
PHIL211	Classical Philosophy	200	8	1		

Number	*Subject*	*Level*	*Credit Points*	*Session Offered*	*Pre-Requisite*	*Co-Requisite*	*Remarks*
PHIL262	Empiricism A	200	8	2	At least 8 credit points in Philosophy or Psychology or H.P.S.		Not to count with PHIL212 or PHIL322
PHIL221	General History of Logic	200	8	1			
PHIL222	Set Theory 222	200	8	1	Either PHIL112 or PHIL153 or 12 credit points in Mathematics		
PHIL223	Problems of Philosophy	200	16	3			Not to count with PHIL123
PHIL232	Political Philosophy A	200	8	2	At least 8 credit points in Philosophy or History or Sociology or Economics		Not to count with PHIL332
PHIL233	Philosophy of Language	200	16	3	At least 8 credit points in Philosophy		Not to count with PHIL321 or PHIL323
PHIL242	Contemporary Continental Philosophy	200	8	2	At least 8 credit points in Philosophy or Psychology or Sociology or European Languages		Not to count with PHIL312
300-Level							
PHIL301	Ethics B	300	12	1	At least 12 credit points in Philosophy		Not to count with PHIL201 or PHIL251
PHIL302	Aesthetics B	300	12	2	At least 12 credit points in Philosophy		Not to count with PHIL202 or PHIL252
PHIL311	Kant's Critique of Pure Reason	300	12	1	At least 12 credit points in Philosophy		
PHIL312	Phenomenology and Existentialism	300	12	2	At least 12 credit points in Philosophy		Not to count with PHIL242
PHIL321	Logical Analysis	300	12	1	At least 12 credit points in Philosophy		Not to count with PHIL233 or PHIL323
PHIL322	Empiricism B	300	12	2	At least 12 credit points in Philosophy		Not to count with PHIL212 or PHIL262
PHIL323	Contemporary Analytical Philosophy	300	24	3	At least 12 credit points in Philosophy		Not to count with PHIL233 or PHIL321
PHIL332	Political Philosophy B	300	12	2	At least 12 credit points in Philosophy		Not to count with PHIL232
PHIL351	Formal Logic I	300	12	1	At least 12 credit points in Philosophy or Mathematics		
PHIL352	Formal Logic II	300	12	2	PHIL351		

400-Level

PHIL403	Philosophy Honours	400	48	3	Entry to the Honours year or Honours subjects shall be determined by the Academic Senate on the advice of the Departmental Chairman		

DEPARTMENT OF PHYSICS — FACULTY OF SCIENCE

100-Level

PHYS141	Fundamentals of Physics A	100	6	3		MATH101	Excludes PHYS151
PHYS142	Fundamentals of Physics B	100	6	3		MATH101	Excludes PHYS151
PHYS151	The Art of Physics	100	6	2			Excludes PHYS141 and PHYS142

200-Level

PHYS201	Intermediate Physics A	200	12	3	PHYS141 PHYS142	MATH201 MATH202	Excludes PHYS205, 220, 225, 235 and 244
PHYS205	Modern Physics	200	6	3	PHYS141 PHYS142	MATH201 MATH202	Excludes PHYS201 and PHYS211
PHYS211	Intermediate Physics B	200	12	3	PHYS141 PHYS142	PHYS201	Excludes PHYS215, 220, 235, 244 and ELEC211
PHYS215	Vibrations, Waves and Optics	200	6	3	PHYS141 PHYS142	MATH201 MATH202	Excludes PHYS201 and PHYS211
PHYS220	Intermediate Physics for Engineers	200	12	3	PHYS141 PHYS142	MATH201 MATH202	Excludes PHYS201, 205, 211, 215, 225 and 244
PHYS225	Intermediate Electricity and Magnetism	200	6	3	PHYS141 PHYS142	MATH201 MATH202	Excludes PHYS201 and PHYS211
PHYS235	Mechanics and Thermodynamics	200	6	3	PHYS141 PHYS142	MATH201 MATH202	Excludes PHYS201 and PHYS211
PHYS244	Modern Physics, Vibrations, Waves and Optics	200	8	3	PHYS141 PHYS142	MATH201 MATH202	Excludes PHYS201, 205 and 211
PHYS248	Astronomy	200	6	3	PHYS141 PHYS142		Approval for taking Astronomy at the 300-level is at the discretion of the Chairman of the Department of Physics.

Number	*Subject*	*Level*	*Credit Points*	*Session Offered*	*Pre-Requisite*	*Co-Requisite*	*Remarks*
300-Level							
PHYS301	Classical Mechanics and Electromagnetism	300	6	1	PHYS201 *or* PHYS225 and PHYS235	MATH301	Excludes PHYS302
PHYS302	Classical Mechanics, Electromagnetism and Plasma Physics	300	8	1	PHYS201 *or* PHYS225 and PHYS235	MATH301	Excludes PHYS301
PHYS309	Advanced Experimental Physics	300	12	3	24 credit points at 200-level		Excludes PHYS312
PHYS311	Quantum and Statistical Mechanics	300	8	3	PHYS201 and 211 *or* PHYS205, 215 and 235 *or* PHYS235 and 244	MATH301	Excludes PHYS315
PHYS312	Advanced Experimental Physics with Electronics	300	16	3	24 credit points at 200-level and, or including PHYS211 or ELEC211		Excludes PHYS309 and ELEC312
PHYS315	Quantum Mechanics and Statistical Mechanics with Electronics	300	12	3	Same as PHYS311 and includes either PHYS211 or ELEC211	MATH301	Excludes PHYS311, 312 and ELEC312
PHYS321	Astro-, Nuclear and Solid State Physics	300	6	2	PHYS201 and 211 *or* PHYS205, 215, 225 and 235	PHYS311	Excludes PHYS322
PHYS322	Astro-, High Energy, Nuclear and Solid State Physics	300	8	2	Same as PHYS321	PHYS311	Excludes PHYS321
PHYS348	Astronomy	300	6	3	PHYS141 PHYS142		Approval for taking Astronomy at the 300-level is at the discretion of the Chairman of the Department of Physics.
400-Level							
PHYS401	Theoretical Mechanics and Electromagnetism	400	8	1	See preamble to Honours Level Subjects	See preamble to Honours Level Subjects	
PHYS410	Honours Project	400	18	3	"	"	
PHYS441	Astro-, and Nuclear Physics	400	8	3	"	"	Excludes PHYS455 and PHYS465
PHYS443	Quantum Mechanics and Statistical Mechanics	400	12	3	"	"	
PHYS446	Solid State Physics	400	8	3	"	"	Excludes PHYS455 and PHYS465
PHYS455	Nuclear and Solid State Physics	400	12	3	"	"	Excludes PHYS441, 446 and 465
PHYS465	Astro-, and Solid State Physics	400	12	3	"	"	Excludes PHYS441, 446 and 455

100-Level						
PSYC101	Psychology IA	100	6	1		
PSYC102	Psychology IB	100	6	2	PSYC101	
200-Level						
PSYC231	Personality	200	6	1	PSYC101, 102	
PSYC232	Research Methods & Statistics	200	6	2	PSYC101, 102	
PSYC233	Development	200	6	1	PSYC101, 102	
PSYC234	Psychology of Learning	200	6	2	PSYC101, 102	
PSYC235	Psychological Assessment	200	6	1	PSYC101, 102	
PSYC236	Applied Psychology	200	6	2	PSYC101, 102	
300-Level						
MATH334	Design and Analysis	300	6	3	PSYC203 and 204 *or* PSYC232 *or* PSYC242	
PSYC338	Behaviour Modification	300	6	2	#PSYC205 and 206 *or* PSYC234 *or* PSYC244	
PSYC335	Humanistic Psychology	300	6	1	PSYC201 and 202 *or* PSYC231 *or* PSYC241	
PSYC336	Experimental Psychology	300	6	1	PSYC203 and 204 *or* PSYC232 *or* PSYC242. Desirable: PSYC205 and 206 *or* PSYC234 *or* PSYC244	
PSYC346	Experimental Psychology (Science)	300	6	1	As above	Not to count with PSYC336
PSYC312	Counselling Psychology**	300	6	1	PSYC201 *or* PSYC231 *or* PSYC241*	*PSYC235 as pre-requisite to take effect in 1979
PSYC348	Behaviour Modification (Science)	300	6	2	#PSYC205 and 206 *or* PSYC234 *or* PSYC244	Not to count with PSYC338
PSYC339	Counselling Psychology (Practicum) (To be offered in 1979)	300	6	1	PSYC312	
PSYC315	Psychology of Abnormality	300	6	2	PSYC201 *or* PSYC231 *or* PSYC241	

#Pre-requisites for PSYC338 and PSYC348 are desirable for 1978 and mandatory for 1979.

**This subject is a pre-requisite for PSYC339 Counselling Psychology (Practicum) which should be offered in the first session 1979.

Number	*Subject*	*Level*	*Credit Points*	*Session Offered*	*Pre-Requisite*	*Co-Requisite*	*Remarks*
PSYC316	Individual Differences	300	6	2	PSYC201 *or* PSYC231 *or* PSYC241		
PSYC323	Industrial & Organizational Psychology	300	6	2	Desirable: PSYC322 *or* PSYC342		Not to count with PSYC317 or PSYC347
PSYC343	Industrial & Organizational Psychology (Science)	300	6	2	Desirable: PSYC322 *or* PSYC342		Not to count with PSYC323 or PSYC317 or PSYC347
PSYC322	Social Psychology	300	6	1			
PSYC342	Social Psychology (Science)	300	6	1			Not to count with PSYC322
400-Level							
PSYC431	Psychology IV Honours - Theoretical Essay	400	18	3	48 credit points of Psychology at the 300-level		
PSYC432	Psychology IV Honours - Coursework	400	6	3	"	"	*See note
PSYC433	Psychology IV Honours - Empirical Thesis	400	24	3	"	"	

*For students wishing to enrol for the 400-level psychology course leading to the bachelor degree with honours in psychology. *Note:* Entry to the Honours year or Honours subjects shall be determined by the Academic Senate on the advice of the Departmental Chairman. At 100-level, students are required to take 12 credit points of psychology. PSYC101 and PSYC102 must be completed before entering 200-level subjects. At 200-level, students are required to take 24 credit points of psychology, including PSYC232 or PSYC242 which is a compulsory pre-requisite for entry to the honours year *and*, at least, one of PSYC231 or PSYC234. At 300-level, students are required to take 48 credit points of psychology. Students entering the honours year are advised to formally enrol in MATH334; however, a minimum requirement is to audit this subject.

For students planning to make a substantial and coherent (that is, a major) study of Psychology, for example, to satisfy the bachelor degree requirements towards future associate membership of the Australian Psychological Society, students are required to take 12 credit points of psychology at 100-level, 18 credit points of psychology at 200-level, and 24 credit points of psychology at 300-level. *Note:* No more than 18 credit points of 300-level psychology can be taken until a minimum of 18 credit points of 200-level psychology have been completed.

The pre-requisite for all 200-level subjects is 12 credit points of 100-level psychology. The pre-requisite for all 300-level subjects is 12 credit points of 200-level psychology.

DEPARTMENT OF SOCIOLOGY — FACULTY OF SOCIAL SCIENCES

100-Level							
SOC100	Sociology I	100	12	3			

200-Level

SOC202	Sociology IIA: Central Themes in Sociology	200	8	1	SOC100		
SOC213	Belief Systems, Ideologies - A	200	8	2	SOC202		Not to count with SOC214, SOC215 or SOC217
SOC214	Social Stratification - A	200	8	2	SOC202		Not to count with SOC213, SOC215 or SOC218
SOC215	Time, Work and Leisure - A	200	8	2	SOC202		Not to count with SOC213, SOC214 or SOC219
SOC217	Belief Systems, Ideologies - B	200	6	2		*One* of SOC214 or SOC215	
SOC218	Social Stratification - B	200	6	2		*One* of SOC213 or SOC215	
SOC219	Time, Work and Leisure - B	200	6	2		*One* of SOC213 or SOC214	
SOC222	Sociology II Advanced: Foundations of Sociological Thought	200	6	1	SOC100#	Normally SOC202	
SOC223	Sociology II Advanced: Contemporary European Sociology	200	6	2	Credit in SOC222	Normally *one* of SOC213, SOC214 or SOC215	

300-Level

SOC301	Contemporary Culture A*	300	6	1	Normally *one* of SOC213, SOC214 or SOC215	
SOC302	Religion and Society*	300	6	2	Normally *one* of SOC213, SOC214 or SOC215	
SOC303	The Individual in Society*	300	6	1	Normally *one* of SOC213, SOC214 or SOC215	
SOC304	Military Sociology*	300	6	1	Normally *one* of SOC213, SOC214 or SOC215	
SOC305	Sociology of Migration*	300	6	1	Normally *one* of SOC213, SOC214 or SOC215	
SOC306	Sociological Measurement*	300	6	1	Normally *one* of SOC213, SOC214 or SOC215	
SOC311	Contemporary Culture B*	300	6	2	Normally SOC301	
SOC312	Science, Technology and Society*	300	6	2	*One* of SOC213, SOC214 or SOC215	

#Normally credit in SOC100 and approval by the Departmental Chairman

*See page 87

Number	*Subject*	*Level*	*Credit Points*	*Session Offered*	*Pre-Requisite*	*Co-Requisite*	*Remarks*
SOC313	The Individual in the Organisation*	300	6	2	*One* of SOC213, SOC214 or SOC215		
SOC315	Ethology*	300	6	2	*One* of SOC213, SOC214 or SOC215		
SOC316	Research Techniques of Social Enquiry*	300	6	2	*One* of SOC213, SOC214 or SOC215		
SOC317	Interaction and Small Group Theory*	300	6	2	*One* of SOC213. SOC214 or SOC215		Not available in 1978 for students who completed the SOC212 Option 2, "Structure and Dynamics of Small Groups" in 1977
SOC322	Sociology III Advanced: Sociology of Knowledge I	300	6	1	Normally credit in SOC223 and approval of the Departmental Chairman	Normally current enrolment in two 300-level pass options in Sociology	
SOC323	Sociology III Advanced: Sociology of Knowledge II	300	6	2	Credit in SOC322	Normally current enrolment in two 300-level pass options in Sociology	
400-Level							
SOC401	Key Issues in Contemporary Sociology I	400	6	1		Normally SOC431 and SOC490	Entry into the Honours year or Honours subjects will be determined by the Academic Senate on the advice of the Departmental Chairman
SOC411	Key Issues in Contemporary Sociology II	400	6	2	Normally credit in SOC401	Normally SOC431 and SOC490	
SOC431	Research works in Progress Seminar	400	12	3	Normally credit within courses totalling at least 36 credit points at Sociology 300-level including credit in SOC322	Normally SOC401, SOC411 and SOC490	
SOC490	Sociology IV Honours Thesis	400	24	3	Normally credit within courses totalling at least 36 credit points at Sociology 300-level including credit in SOC322	Normally SOC401, SOC411 and SOC431	

*NOTES: 1. All of the starred courses may not be offered in any one year. For advice on 300-level courses offered in 1978, students should consult with the Departmental Chairman.

2. Substantial and coherent study in Sociology requires students to complete at least 24 credit points at a 300-level.

SCHEDULE B#

COMMERCE

Set out below are the subjects that may be taken in the Commerce course. Additional details relating to the subjects listed - such as co- and pre-requisites - are set out in Schedule A.

SCHEDULE B - 1

PRESCRIBED SUBJECTS FOR ALL B COM CANDIDATES

Number	*Subject*	*Level*	*Credit Points*	*Session Offered*
ACCY100	Accounting & Financial Management IA	100	6	1
ACCY110	Accounting & Financial Management IB	100	6	2
ECON101	Economics I	100	6	1
ECON111	Economics II	100	6	2
ECON121	Quantitative Methods I*	100	6	1
ECON122	Quantitative Methods II*	100	6	2

*Accountancy students may substitute a mathematics course approved by the Chairman of the Department of Accountancy for Quantitative Methods I and II.

SCHEDULE B - 2

FURTHER SUBJECTS REQUIRED FOR THE SPECIALISATION IN ACCOUNTANCY*

ACCY160	Law in Society	100	6	1
ACCY214	Accounting & Financial Management IIA	200	8	1
ACCY204	Accounting & Financial Management IIB	200	8	2
ACCY224	Business Finance	200	8	1
ACCY234	Information Systems in Accounting	200	8	2
ACCY302	Accounting & Financial Management IIIA	300	12	1
ACCY312	Accounting & Financial Management IIIB	300	12	2

SCHEDULE B - 3

FURTHER SUBJECTS REQUIRED FOR THE SPECIALISATION IN ECONOMICS*

ECON205	Macroeconomics	200	8	1
ECON215	Microeconomics	200	8	1
Plus *two* of the following:				
ECON206	Public Finance	200	8	2
ECON216	International Economics	200	8	2
ECON223	Quantitative Methods III	200	8	1
ECON224	Quantitative Methods IV	200	8	2
Plus *three* of the following options:				
ECON302	Comparative Economic Systems**	300	8	-
ECON303	Economic Development Issues	300	8	2
ECON304	Economic Policy	300	8	1
ECON305	Economic Development Planning	300	8	1

#Several proposed amendments, which have not been approved by Council at the time of printing, have been included in Schedule B. Their approval is dependent on the approval of corresponding amendments to Part IV of the Bachelor Degree Requirements. Students are advised to check with the Student Enquiries Office for details prior to enrolment.

*The Chairman of the Department of Accountancy, in the case of Schedule B - 2, or the Chairman of the Department of Economics, in the case of Schedule B - 3, may approve a candidate enrolling for a subject with a value of at least 6 credit points from Schedule A in place of one of the subjects listed in the relevant Schedule B - 2 or B - 3.

**These subjects will not be offered in 1978.

Number	*Subject*	*Level*	*Credit Points*	*Session Offered*
ECON306	International Trade	300	8	2
ECON307	International Monetary Economics	300	8	2
ECON311	Natural Resource Economics	300	8	1
ECON312	Industrial Economics	300	8	2
ECON313	Transport Economics	300	8	2
ECON314	Urban and Regional Economics**	300	8	-
ECON315	Microeconomics - Theory & Application	300	8	1
ECON316	History of Economic Thought	300	8	2
ECON321	Econometrics	300	8	1
ECON322	Mathematical Economics	300	8	1
ECON323	Econometric Models	300	8	2

SCHEDULE B - 4

COMBINED SPECIALISATION: ACCOUNTANCY AND ECONOMICS

ACCY100	Accounting & Financial Management IA	100	6	1
ACCY110	Accounting & Financial Management IB	100	6	2
ACCY160	Law in Society	100	6	1
ECON101	Economics I	100	6	1
ECON111	Economics II	100	6	2
ECON121	Quantitative Methods I	100	6	1
ECON122	Quantitative Methods II	100	6	2
And *one* subject from Schedule A				
ACCY214	Accounting & Financial Management IIA	200	8	1
ACCY204	Accounting & Financial Management IIB	200	8	2
ECON205	Macroeconomics	200	8	1
ECON215	Microeconomics	200	8	1
And *either*				
ACCY224	Business Finance	200	8	1
Or				
ACCY234	Information Systems in Accounting	200	8	2
And *one* of the following Economics 200-level subjects:				
ECON206	Public Finance	200	8	2
ECON216	International Economics	200	8	2
ECON223	Quantitative Methods III	200	8	1
ECON224	Quantitative Methods IV	200	8	2
And				
ACCY302	Accounting & Financial Management IIIA	300	12	1
ACCY312	Accounting & Financial Management IIIB	300	12	2
And *three* of the Economics 300-level options in Schedule B - 3				

**These subjects will not be offered in 1978

SCHEDULE C

ENGINEERING

1. BACHELOR OF ENGINEERING - CIVIL ENGINEERING

The course offered by the Department of Civil Engineering is designed to give a general academic training for the professional Civil Engineer. The course normally extends from a minimum of 8 sessions to a maximum of 16 sessions extending over a period of from 4 to 8 years.

In the earlier sessions of the course students are given further training in the basic sciences - Mathematics, Chemistry, Physics - together with an introduction to Civil Engineering, including practice areas of surveying, construction and design. Subsequent sessions of the course are increasingly devoted to Civil Engineering subjects and the design of Engineering structures, while the final sessions of the course are professionally oriented including Construction, Management, Town Planning and Public Health Engineering. Each student, whether completing the course in minimum time (8 sessions) or longer, is required to prepare a thesis within some area of specialization. A feature of the course is the optional areas of study available and students can include various areas of specialization depending upon their interests and abilities. Professional experience is a necessary part of the course. All students must complete twelve weeks of professional experience during the vacation one year before the completion of their course unless exempted by the Department due to the student's full-time professional employment.

The course offers a number of units each of one session duration which are classified either as core subjects or electives. The study of the core subjects, which are shown in Schedule C, is mandatory.

Generally the course requires the satisfactory completion of 60 units of study, identified in the schedule by a disparate number, the selection of the units being constrained by the pre- and co-requisite requirements. Two patterns of study which meet these requirements are shown, but, as progression within the course is by subject, variation of these programmes may occur subject to approval by the Chairman of the Department.

The subjects Town Planning, Roads Engineering and Public Health Engineering, are recognized by the Local Government Examination Committee as giving exemption from those three areas when applying for a certificate as Engineer under the Local Government Act 1919. Full recognition of the course for the pre- and post-1980 periodshas been granted by the Institution of Engineers, Australia. There is but one Wollongong course, whether taken over 8 or 16 sessions and students continuing with their existing courses should note that such courses will be progressively replaced.

The Wollongong course may be taken at various rates to suit the individual student. In general, most students with full-time professional employment may complete their course within 12 sessions.

Assessment: In addition to meeting the requirements set out in the University Calendar a student's performance in a course will be monitored within the Department of Civil Engineering by a grade-point system:

Final grades in each subject of the course will be marked A, B, C, D, E or F; where A = highest, B = above average, C = average, D = passing grade, E = a conceded passing grade and F = failure.

An A pass will count as 5 points for each credit hour of content (e.g. an A in a 3 credit-hour subject will count as 15 grade points), a B will count as 4 points, C as 3 points, D as 2 points, E as 1 point and F as 0 point. Students receiving a grade of F must repeat the subject for credit.

A scholarship index or grade point average is obtained by dividing the total number of grade points obtained by the number of credit hours taken.

A minimum of 2.0 corresponding to a D average is required for graduation. Students with less than 2.0 in the first two years of their course will be subject to consideration for exclusion and may be excluded from the course. Thereafter students must maintain a suitable rate of progression within the framework of the University's Degree Requirements to allow graduation.

Note: For subjects listed below, pre-requisites and co-requisites are indicated where applicable.

Number	*Subject*	*Level*	*Session Offered*	*Pre-Requisites*	*Co-Requisites*	*Remarks*
100-Level Core Subjects						
CIVL111	Introduction to Design C	100	2			
CIVL122	Mechanics and Structures	100	1			
CIVL123	Dynamics for Civil Engineers	100	2			
CIVL142	Materials 1C	100	2			
CIVL171	Engineering Surveying 1	100	1			
CIVL172	Engineering Survey Camp	100	2		CIVL171	
CIVL191	Building Construction	100	1			
CIVL192	Civil Engineering Construction 1	100	2			
CIVL193	Excursions 1	100	2			
CHEM101	Chemistry 1A	100	1			See Schedule A - Chemistry
MATH101	Mathematics 1A	100	3	See Schedule A - Mathematics		See Schedule A - Mathematics
PHYS142	Fundamentals of Physics B	100	3		MATH101	See Schedule A - Physics
100-Level Elective Subjects						
ECON111	Economics II	100	2			
200-Level Core Subjects						
CIVL213	Structural Design 1	200	2	CIVL111 *or* MECH122	CIVL251	
CIVL225	Engineering Mechanics 1	200	1	CIVL123		
CIVL226	Engineering Mechanics 2	200	2		CIVL281	
CIVL231	Hydraulics 1	200	2	MATH101		
CIVL243	Materials 2C	200	2		CIVL251	
CIVL251	Strength of Materials 1	200	1	CIVL122 *or* MECH101	CIVL281 *or* MATH281	
CIVL252	Strength of Materials 2	200	2		CIVL295 *or* MECH251	
CIVL273	Engineering Surveying 2	200	1		CIVL171	
CIVL281	Computational Techniques in Civil Engineering 1	200	1	MATH101		
CIVL282	Computational Techniques in Civil Engineering 2	200	2	Pre- or Co-requisite CIVL281		
CIVL294	Civil Engineering Construction 2	200	1		CIVL192	

Number	*Subject*	*Level*	*Session Offered*	*Pre-Requisites*	*Co-Requisites*	*Remarks*
CIVL295	Experimental Engineering 1C	200	1	CIVL111, 122		
CIVL296	Excursions 2	200	1		Attending predominantly 200-level subjects	
200-Level Elective Subjects						
MECH241	Thermodynamics I	200	1		MATH281	
ECON213	Microeconomics	200	1			
ELEC291	Applied Electricity 1	200	3			
300-Level Core Subjects						
CIVL312	Civil Engineering Design	300	1		CIVL326, 252	
CIVL314	Structural Design 2	300	2	CIVL312		
CIVL326	Engineering Mechanics 3	300	1	CIVL251		
CIVL327	Engineering Mechanics 4	300	2	CIVL226, 282		
CIVL332	Hydraulics 2	300	1	CIVL231		
CIVL334	Hydraulics 3	300	2	CIVL332		
CIVL344	Materials 3C	300	2	CIVL243		
CIVL353	Structures 1C	300	1	CIVL251		
CIVL354	Structures 2C	300	2	CIVL353		
CIVL362	Soil Mechanics 1	300	1	CIVL251		
CIVL363	Soil Mechanics 2	300	2	CIVL362		
CIVL374	Engineering Surveying 3	300	2	CIVL273		
CIVL397	Civil Engineering Construction 3	300	1	CIVL294		
CIVL398	Excursions 3	300	1		Attending predominantly 300-level subjects	
300-Level Elective Subjects						
ECON312	Industrial Economics	300	2			
MECH391	Heat Transfer for Civil Engineers	300	2			

400-Level Core Subjects

CIVL401	Civil Engineering Thesis	400	3		Completed 90% of 300-level subjects
CIVL481	Engineering Management 1	400	1		Enrolled in predominantly 400-level subjects
CIVL482	Engineering Management 2	400	2		Enrolled in predominantly 400-level subjects
CIVL490	Excursions 4	400	1		Enrolled in predominantly 400-level subjects
CIVL399	Professional Experience	300	1		

400-Level Elective Subjects

CIVL410	Civil Engineering Practice 1	400	3		
CIVL411	Civil Engineering Practice 2	400	3		
CIVL412	Civil Engineering Practice 3	400	3		
CIVL413	Civil Engineering Practice 4	400	3		
CIVL415	Civil Engineering Practice 5	400	3		
CIVL416	Civil Engineering Practice 6	400	3		
CIVL417	Structural Design 3	400	1	CIVL314	
CIVL434	Hydraulic Engineering	400	2	CIVL334	
CIVL445	Civil Engineering Materials 1	400	1	CIVL344	
CIVL446	Civil Engineering Materials 2	400	2	CIVL445	
CIVL455	Structures 3	400	2	CIVL354	
CIVL456	Structures 4	400	2	CIVL354	
CIVL463	Foundation Engineering	400	1	CIVL363	
CIVL464	Soil Mechanics 3	400	2	CIVL363	
CIVL475	Engineering Surveying 4	400	2	CIVL374	
CIVL486	The Civil Engineer and the Environment	400	1	Enrolled in predominantly 400-level subjects	
CIVL487	Town Planning	400	1	Enrolled in predominantly 400-level subjects	
CIVL488	Traffic Engineering and Transportation	400	2	Enrolled in predominantly 400-level subjects	

Number	*Subject*	*Level*	*Session Offered*	*Pre-Requisites*	*Co-Requisites*	*Remarks*
CIVL491	Computer Applications in Civil Engineering 1	400	1	CIVL282, 383	CIVL488	
CIVL492	Computer Applications in Civil Engineering 2	400	2	CIVL282	CIVL354	
CIVL493	Public Health Engineering	400	1		Attending predominantly 400-level subjects	
CIVL494	Coastal Engineering	400	1		Attending predominantly 200-level subjects	
CIVL495	Geology for Civil Engineers	400	2		Attending predominantly 300-level subjects	
CIVL496	Roads Engineering	400	1		Attending predominantly 300-level subjects	
CIVL497	Introductory Modern Languages	400	1			

2(A) BACHELOR OF ENGINEERING - ELECTRICAL ENGINEERING

The Department offers a course leading to a Bachelor of Engineering in Electrical Engineering which may be completed in a minimum of four years of full-time study. Subjects are so scheduled that it may also be undertaken on a part-time basis, in which case the duration will depend upon the particular circumstances of the student. Progression is by subject but the various subject pre- and co-requisites must be satisfied.

Details of the recommended programme for a full-time four year minimum course are set out in Section *(i)*, while Section *(ii)* shows details of the preferred programme for students in approved, full-time industrial employment.

(i) RECOMMENDED FULL-TIME PROGRAMME

YEAR 1

CHEM101	Chemistry IA	100	1			See Schedule A - Chemistry
ELEC131	Computers 1	100	2			
ELEC151	Instrum. & Measurements	100	1 & 2			
MATH101	Mathematics IA	100	3	See Schedule A - Mathematics		See Schedule A - Mathematics
PHYS141	Fundamentals of Physics A	100	3		MATH101	See Schedule A - Physics
PHYS142	Fundamentals of Physics B	100	3		MATH101	See Schedule A - Physics

ELEC101	Electrical Engineering 1	100	3		PHYS142, MATH101	
	Engineering Option 1A*	100	1			
	Engineering Option 1B*	100	2			
						YEAR 2
ELEC203	Circuit Theory 2A	200	3	ELEC101		
ELEC211	Electronics 1	200	3	ELEC101	ELEC203	
ELEC221	E.C. & D. 1	200	3	ELEC101	MATH201, 202, ELEC203	
ELEC251	Laboratory 2A	200	3		ELEC211	
ELEC252	Laboratory 2B	200	3		ELEC221	
MATH201	Mathematics IIA	200	3	MATH101		See Schedule A - Mathematics
MATH202	Mathematics IIS	200	3		MATH201	See Schedule A - Mathematics
PHYS220	Inter. Phys. for Eng.	200	3	PHYS141, 142	MATH201, 202	See Schedule A - Physics
	Engineering Option 2A*		1			
	Engineering Option 2B*		2			
						YEAR 3
ELEC311	Electronics 3A	300	3	ELEC211, 203		
ELEC331	Computers 2	300	3			
ELEC343	Control Systems	300	3	MATH201, 202, ELEC203		
ELEC352	Laboratory 3A	300	3 & 1 or 2		ELEC331	
ELEC353	Laboratory 3B	300	3 & 1 or 2		ELEC311	
ELEC322	E.C. & D. 2	300	3	ELEC221, 203		
ELEC301	Circuit Theory 3A	300	3	ELEC203		
ELEC354	Laboratory 3C	300	3 & 1 or 2	ELEC322	ELEC322	
ELEC355	Laboratory 3D	300	3 & 1 or 2	ELEC343	ELEC343	
MATH301	Mathematics IIIA	300	3	MATH201 and MATH211 or MATH202		See Schedule A - Mathematics
	Engineering Option 3A*		1			
	Engineering Option 3 B*		2			

*See "Notes" page 96

Number	*Subject*	*Level*	*Session Offered*	*Pre-Requisites*	*Co-Requisites*	*Remarks*
						YEAR 4
ELEC423	E.C. & D. 3	400	1		ELEC322	
ELEC431	Computers 3	400	1	ELEC331		
ELEC456	Laboratory 4	400	1	300-level subjects		
ELEC461	Communications 1	400	1	300-level subjects		
ELEC463	Signal Transmission	400	1	300-level subjects		
	4 Engineering Electives*	400	2	300-level subjects		
ELEC457	Thesis	400	3	300-level subjects	400-level core subjects	
	General Elective*		1, 2 or 3			

**NOTES:*

Engineering Options

For 1978 the Engineering Options subjects for the various years (of the course) are as follows:

Year 1:	Stage 2, Part-time					
MECH103	Statics	100	2			
MECH121	Eng. Drawing & Graphics	100	1			
Year 2:	Stage 4, Part-time					
CIVL254	Strength of Materials	200	1	100-level subjects	200-level subjects	
METL201	Materials 1	200	2			
Year 3:	Stage 5, Part-time					
MECH392	Introd. Thermofluid Dynamics	200	1		MATH201, 202 or 281	
MECH344	Heat Transfer	300	2	MECH392		

Final Year Electives

These will be selected from the following list of subjects. Unless class numbers warrant, only four electives will be offered in any year.

ELEC404	Circuit Theory 4	400	1 or 2
ELEC424	Electrical Energy Syst.	400	1 or 2
ELEC425	Generalised Mach. Thy.	400	1 or 2
ELEC426	Electromechanical Dyn.	400	1 or 2
ELEC432	Computers 4	400	1 or 2
ELEC443	Control 3	400	1 or 2
ELEC462	Communications 2	400	1 or 2
ELEC472	Elect. Prop. of Mats.	400	1 or 2
ELEC481	Probab. & Rand. Proc.	400	1 or 2

With the approval of the Departmental Chairman, one Electrical Engineering elective may be replaced by a suitable equivalent subject offered by another department.

General Electives

With the approval of the Departmental Chairman, subjects to the value of not less than 6 credit points may be selected from any Schedule.

Industrial Experience

Full-time BE students must accumulate at least 12 weeks of approved industrial experience, documented in the form of employment reports and preferably in the period between third and fourth year.

(ii) RECOMMENDED PART-TIME PROGRAMME FOR STUDENTS IN FULL-TIME APPROVED INDUSTRIAL EMPLOYMENT

Students in approved, full-time industrial employment become eligible to include Industrial Options in their programme in place of an equivalent amount of core subjects, in Science and Engineering.

Each Option is worth 6 credit points and with the approval of the Departmental Chairman, a student may include Industrial Option 1 in his programme after he has completed at least one full year of suitable industrial experience. Similarly, Industrial Options 2, 3, 4 and 5 may be included after 2, 3, 4 and 5 years respectively of approved experience.

Thus a student completing his course after five years of part-time study and one year of full-time study could include in his course, Industrial Options to the value of 24 credit points.

Industrial Options are related to the student's current full-time employment and a student enrolled in an Industrial Option subject is required to submit written reports to his University Departmental supervisors and to participate in seminars as scheduled from time to time.

In addition to the University supervisor, the student's employer will be asked to nominate an industrial supervisor to advise the student in report and seminar preparation and to ensure that company policy on confidentiality is observed.

The written submissions and seminars will deal with a critical analysis and reporting of general (or nominated specific) aspects of the student's employment. Subject to confidentiality requirements these may cover technical, organisational and management aspects of the employer's industry.

The following stages of this programme will be offered in 1978:

STAGE 1

MATH101	Mathematics IA	100	3	See Schedule A - Mathematics		See Schedule A - Mathematics
PHYS142	Fundamentals of Physics B	100	3		MATH101	See Schedule A - Physics
ELEC101	Electrical Engineering 1	100	3		PHYS142, MATH101	

STAGE 2

ELEC131	Computers 1	100	2			
ELEC151	Instruments & Measurements	100	1 & 2			
PHYS141	Fundamentals of Physics A	100	3		MATH101	See Schedule A - Physics

Number	*Subject*	*Level*	*Session Offered*	*Pre-Requisite*	*Co-Requisite*	*Remarks*
MATH284	Mathematics IIA Pt. 1	200	3	MATH101		See Schedule A - Mathematics (MATH201)
ELEC181	Industrial Option 1	100	3			
	Engineering Option 1A*	100	1			
	Engineering Option 1B*	100	2			
						STAGE 3
ELEC203	Circuit Theory 2A	200	3	ELEC101		
ELEC211	Electronics 1	200	3	ELEC101	ELEC203	
ELEC251	Laboratory 2A	200	3		ELEC211	
MATH285	Mathematics IIA, Pt. 2	200	3	MATH101		See Schedule A - Mathematics (MATH201)
MATH202	Mathematics IIS	200	3		MATH201	See Schedule A - Mathematics
ELEC282	Industrial Option 2	200	3			
PHYS205	Modern Physics	200	3	PHYS141, 142	MATH202 and 201 *or* MATH284 and 285	
						STAGE 4 (ONLY FOR STUDENTS WHO COMPLETED STAGE 3 IN 1977)
ELEC311	Electronics 3A	300	3	ELEC211, 203		
ELEC331	Computers 2	300	3			
ELEC353	Laboratory 3B	300	2		ELEC311	
ELEC221	E.C. & D. 1	200	3	ELEC101	MATH201, 202, ELEC203	
ELEC283	Industrial Option 3	300	3			
PHYS205	Modern Physics	200	3	PHYS141, 142	MATH202 and 201 *or* MATH284 and 285	
	Engineering Option 2A*		1			

*See "Notes" page 96

2(B) BACHELOR OF SCIENCE (ENGINEERING) - ELECTRICAL ENGINEERING

PART-TIME COURSE

No new enrolments will be accepted in this course. The programme for re-enrolling students is set out below.

					STAGE 5
ELEC343	Control Systems	300	3	MATH201, 202 or 281 ELEC203	
ELEC301	Circuit Theory 3A	300	3	ELEC203	
ELEC322	E.C. & D. 2	300	3	ELEC221, 203	
ELEC354	Laboratory 3C	300	3		ELEC322
ELEC355	Laboratory 3D	300	3		ELEC343
	General Studies - 2 subjects#		2		
	Engineering Option 2A*		1		
					STAGE 6
ELEC423	E.C. & D. 3	400	1		ELEC322
ELEC431	Computers 3	400	1	ELEC331	
ELEC456	Laboratory 4	400	1	300-level subjects	
ELEC461	Communications 1	400	1	300-level subjects	
	4 Engineering Electives*	400	2	300-level subjects	

NOTE: INDUSTRIAL TRAINING

For the BSc(Eng) degree a minimum of three years approved industrial training concurrent with the course is required.

*See "Notes" page 96
#See General Studies notes at end of Schedule C

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3. BACHELOR OF ENGINEERING - MECHANICAL ENGINEERING

The aim of the course offered by the Department of Mechanical Engineering is to give high academic training in Mechanical Engineering over a minimum period of 4 years (8 sessions). The course can also be taken on a part-time basis.

Introductory subjects form the first year of the course after which the course is divided into streams consisting of the following Mechanical Engineering subjects: Fluid Mechanics, Thermodynamics, Design, Dynamics, Mechanics of Solids, Materials, Control and Systems, Environmental Engineering and

Number	*Subject*	*Level*	*Session Offered*	*Pre-Requisite*	*Co-Requisite*	*Remarks*

Experimental Engineering. The final year of the course consists of a wide selection of electives allowing students to choose subjects within their own areas of specialisation. These electives include the subjects mentioned above, together with subjects of an applications nature including Materials Handling Systems, Refrigeration and Air Conditioning, Lubrication etc.

During the final year each student is required to prepare a thesis on a topic approved by the Chairman of the Department.

The course has been fully recognised for the pre- and post-1980 periods by The Institution of Engineers, Australia, which is the professional accrediting body. This recognition exempts graduates from examinations for admission to the grade of Member of the Institution.

Industrial training and experience is an essential part of the course at Wollongong. Full-time students are required to obtain an aggregate of at least 12 weeks of practical experience during the summer recesses. For part-time students, each year of appropriate full-time industrial employment will be credited as one elective up to a maximum of six electives.

On the following pages two programmes of study are presented in a sequence that will satisfy the pre- and co-requisite requirements. However, as progression within the course is by *subject*, variations of these programmes may occur subject to approval by the Chairman of Department.

All students must take particular notice of the Bachelor Degree Requirements regarding Minimum Rate of Progress: Requirement 13.2 and Restriction on Enrolment: Requirement 14. For the purposes of Requirement 13.2 a prescribed course in Mechanical Engineering is interpreted as that course which has been prescribed for a particular student by the Chairman of Department.

Honours are awarded at the end of the course on the basis of overall performance throughout the course.

FULL-TIME PROGRAMME

YEAR 1

CHEM101	Chemistry IA	100	1			See Schedule A - Chemistry
MECH101	Statics	100	1			
MECH121	Eng. Drawing & Graphics	100	1			
MECH131	Eng. Processes & Practice	100	1			
CIVL142	Materials 1C	100	2			
ELEC131	Computers 1	100	2			
MECH102	Dynamics	100	2			
MECH122	Design I	100	2		MECH121	
MATH101	Mathematics 1A	100	3	See Schedule A - Mathematics		See Schedule A - Mathematics
PHYS142	Fundamentals of Physics B	100	3		MATH101	See Schedule A - Physics

YEAR 2

MECH201	Mechanics of Solids 1	200	1	MECH101		
MECH223	Engineering Dynamics	200	1	MECH102		

MECH241	Thermodynamics I	200	1		MATH281
MECH251	Experimental Engineering I	200	1		
MECH281	Environmental Engineering 1	200	1		
MECH202	Engineering Materials I	200	2		MECH201
MECH213	Mechanical Engineering Design I	200	2	MECH122	MECH201
MECH214	Structural Design for Mechanical Engineers	200	2	MECH122	
MECH224	System Dynamics	200	2		MATH281
MECH231	Fluid Mechanics I	200	2		MATH281
ELEC291	Applied Electricity I	200	3		PHYS142
MATH281	Mathematics IIE	200	3	MATH101	
					YEAR 3
MECH301	Mechanics of Solids II	300	1	MECH201	
MECH313	Mechanical Engineering Design II	300	1	MECH213	
MECH325	Machine Dynamics	300	1	MECH223	
MECH332	Fluid Mechanics II	300	1	MECH231	
MECH342	Thermodynamics II	300	1	MECH241	
MECH361	Control Systems I	300	1		MECH224
MECH333	Fluid Mechanics III	300	2	MECH332	
MECH344	Heat Transfer	300	2	MECH241	MECH332
MECH353	Experimental Engineering II	300	2	MECH251	MECH342
MECH362	Control Systems II	300	2		MECH361
MECH363	Systems Analysis I	300	2		
	3 Electives		1 & 2		
					YEAR 4
CIVL481	Engineering Management I	400	1		
MECH497	Industrial Training	400	1		
CIVL482	Engineering Management II	400	2		
MECH401	Thesis	400	3		

Number	*Subject*	*Level*	*Session Offered*	*Pre-Requisite*	*Co-Requisite*	*Remarks*
	Electives	400	1 & 2			
Plus at least 7 electives (spread over two sessions) selected from the following electives subject to the approval of the Chairman of the Department.						
List of Electives which may be taken in Third or Fourth Year						
MECH402	Engineering Materials II	400	2	MECH202		
MECH425	Hydraulic & Pneumatic Systems	400	1	MECH224		
MECH443	Thermodynamics III	400	2	MECH324		
MECH473	Materials Handling Systems I	400	1			
MECH474	Materials Handling Systems II	400	2		MECH473	
MECH483	Environmental Engineering II	400	1	MECH281	MECH241 and MECH231	
MECH484	Environmental Engineering III	400	2	MECH281	MECH241 and MECH231	
List of Electives which may be taken in Fourth Year						
MECH403	Mechanics of Solids III	400	1	MECH301		
MECH413	Mechanical Engineering Design III	400	1	MECH213	MECH344 and MECH342 and MECH333	
MECH415	Optimum Design	400	2			
MECH423	Applied Dynamics I	400	1	MECH325		
MECH424	Applied Dynamics II	400	2		MECH423	
MECH433	Lubrication	400	2	MECH332		
MECH434	Fluid Mechanics IV	400	2	MECH332		
MECH444	Thermodynamics IV	400	1	MECH342		
MECH445	Refrigeration & Air Conditioning	400	1	MECH342		
MECH463	Control Systems III	400	2		MECH362	
MECH464	Systems Analysis II	400	1		MECH363	
MECH465	Systems Analysis III	400	1		MECH363	
MECH475	Fluid Transport of Bulk Solids	400	2	MECH332		
MECH481	Special Topics in Mechanical Engineering 1	400	1			
MECH482	Special Topics in Mechanical Engineering II	400	2			
MECH485	Environmental Engineering IV	400	2	MECH281		

PART-TIME PROGRAMME

STAGE 1

MECH101	Statics	100	1		
MECH121	Engineering Drawing & Graphics	100	1		
MECH102	Dynamics	100	2		
MECH122	Design I	100	2		MECH121
MECH198	Industrial Experience I	100	3		
MATH101	Mathematics IA	100	3	See Schedule A - Mathematics	

STAGE 2

CHEM101	Chemistry IA	100	1		
MECH131	Engineering Processes & Practice	100	1		
ELEC131	Computers I	100	2		
CIVL142	Materials IC	100	2		
MECH199	Industrial Experience II	100	3		
PHYS142	Fundamentals of Physics B	100	3		MATH101

STAGE 3

MECH201	Mechanics of Solids I	200	1	MECH101	
MECH223	Engineering Dynamics	200	1	MECH102	
MECH213	Mechanical Engineering Design I	200	2	MECH122	MECH201
MECH224	System Dynamics	200	2		MATH281
MECH298	Industrial Experience III	200	3		
MATH281	Mathematics IIE	200	3	MATH101	

STAGE 4

MECH241	Thermodynamics I	200	1		MATH281
MECH251	Experimental Engineering I	200	1		
MECH281	Environmental Engineering I	200	1		

Number	*Subject*	*Level*	*Session Offered*	*Pre-Requisite*	*Co-Requisite*	*Remarks*
MECH202	Engineering Materials I	200	2		MECH201	
MECH214	Structural Design for Mechanical Engineers	200	2	MECH122		
MECH231	Fluid Mechanics I	200	2		MATH281	
MECH299	Industrial Experience IV	200	3			
ELEC291	Applied Electricity I	200	3		PHYS142	
						STAGE 5
MECH325	Machine Dynamics	300	1	MECH223		
MECH332	Fluid Mechanics II	300	1	MECH231		
MECH342	Thermodynamics II	300	1	MECH241		
MECH361	Control Systems I	300	1		MECH224	
MECH333	Fluid Mechanics III	300	2	MECH332		
MECH344	Heat Transfer	300	2	MECH241	MECH332	
MECH353	Experimental Engineering II	300	2	MECH251	MECH342	
MECH363	Systems Analysis I	300	2			
MECH398	Industrial Experience V	300	3			
						YEAR 6 (FULL-TIME OR TWO PART-TIME STAGES)
MECH313	Mechanical Engineering Design II	300	1	MECH213		
MECH399	Industrial Experience VI	300	3			
MECH401	Thesis	400	3			

Plus at least 13 electives (spread over two sessions) selected from the following electives subject to the approval of the Chairman of the Department. Note that part-time students will be allowed a maximum of six elective exemptions for satisfactory completion of MECH198, 199, 298, 299, 398 and 399.

List of Electives

MECH301	Mechanics of Solids II	300	1	MECH201	
MECH444	Thermodynamics IV	400	1	MECH342	
MECH423	Applied Dynamics I	400	1	MECH325	
MECH425	Hydraulic and Pneumatic Systems	400	1	MECH224	

MECH473	Materials Handling Systems I	400	1		
MECH483	Environmental Engineering II	400	1	MECH281	MECH241 and MECH231
MECH464	Systems Analysis II	400	1		MECH363
MECH465	Systems Analysis III	400	1		MECH363
CIVL481	Engineering Management I	400	1		
MECH481	Special Topics in Mechanical Engineering I	400	1		
MECH403	Mechanics of Solids III	400	1	MECH301	
MECH413	Mechanical Engineering Design III	400	1	MECH213	MECH344, MECH342 and MECH333
MECH445	Refrigeration and Air Conditioning	400	1	MECH342	
MECH362	Control Systems II	300	2		MECH361
MECH443	Thermodynamics III	400	2	MECH342	
MECH424	Applied Dynamics II	400	2		MECH423
MECH415	Optimum Design	400	2		
MECH474	Materials Handling Systems II	400	2		MECH473
MECH484	Environmental Engineering III	400	2	MECH281	MECH241 and MECH231
MECH434	Fluids Mechanics IV	400	2	MECH332	
MECH463	Control Systems III	400	2		MECH362
MECH433	Lubrication	400	2	MECH332	
MECH475	Fluid Transport of Bulk Solids	400	2	MECH332	
CIVL482	Engineering Management II	400	2		
MECH402	Engineering Materials II	400	2	MECH202	
MECH482	Special Topics in Mechanical Engineering II	400	2		
MECH485	Environmental Engineering IV	400	2	MECH281	

4. BACHELOR OF ENGINEERING - MINING ENGINEERING

The Mining Engineering course offered is designed to give a general academic training for the professional Mining Engineer and to meet all statutory requirements. The course normally extends from a minimum of 8 sessions to a maximum of 16 sessions over a period of from 4 to 8 years.

In the earlier sessions of the course students are given further training in the basic sciences - Mathematics, Chemistry, Physics - together with an introduction to Civil Engineering, including practice areas of surveying, construction and design. Subsequent sessions are increasingly devoted to Mining

Number	*Subject*	*Level*	*Session Offered*	*Pre-Requisite*	*Co-Requisite*	*Remarks*

Engineering subjects and the design of Engineering structures, while the final sessions are completely professionally oriented. Each student, whether completing the course in minimum time (8 sessions) or longer, is required to prepare a thesis within some area of specialization. A feature of the course is the optional areas of study available and students can include various areas of specialization depending upon their interests and abilities. Professional experience is a necessary part of the course. All students should complete at least 2 half-years professional experience before the completion of their course.

The course offers a number of units each of 1 session duration which are classified either as core subjects or electives. The study of the core subjects, which are shown in Schedule C, is mandatory.

Generally the course requires the satisfactory completion of 55 units of study, identified in the schedule by a disparate number, the selection of the units being constrained by the pre- and co-requisite requirements. One pattern of study which meets these requirements is shown, but, as progression within the course is by subject, variation of this programme may occur subject to approval by the Chairman of the Department.

Assessment: In addition to meeting the requirements for the degree set out in the University Calendar a student's performance in a course will be monitored within the Department of Civil Engineering by a grade-point system:

Final grades in each subject of the course will be marked A, B, C, D, E, or F; where A = highest, B = above average, C = average, D = passing grade, E = a conceded passing grade and F = failure.

An A pass will count as 5 points for each credit hour of content (e.g. An A in a 3 credit-hour subject will count as 15 grade points), a B will count as 4 points, C as 3 points, D as 2 points, E as 1 point and F as 0 point. Students receiving a grade of F must repeat the subject for credit.

A scholarship index or grade point average is obtained by dividing the total number of grade points obtained by the number of credit hours taken.

A minimum of 2.0 corresponding to a D average is required for graduation. Students with less than 2.0 in the first two years of their course will be subject to consideration for exclusion and may be excluded from the course. Thereafter students must maintain a minimum rate of progression within the framework of the University's Degree Requirements to allow graduation.

Note: For subjects listed below, pre-requisites and co-requisites are indicated where applicable.

100-Level Core Subjects

MINE111	Industrial Experience	100	3			
MINE112	Professional Practice 1	100	3			
CIVL111	Introduction to Design C	100	2			
CIVL122	Mechanics and Structures	100	1			
CIVL123	Dynamics for Civil Engineers	100	2			
CIVL142	Materials 1C	100	2			
CIVL171	Engineering Surveying 1	100	1			
CIVL172	Engineering Survey Camp	100	2		CIVL171	
CIVL191	Building Construction	100	1			

CIVL192	Civil Engienering Construction 1	100	2			
CIVL193	Excursions 1	100	2			
CHEM101	Chemistry 1A	100	1			See Schedule A - Chemistry
MATH101	Mathematics 1A	100	3	See Schedule A - Mathematics		See Schedule A - Mathematics
PHYS142	Fundamentals of Physics B	100	3		MATH101	See Schedule A - Physics
200-Level Core Subjects						
MINE213	Professional Practice 2	200	3			
MINE221	Computational Tech. in Mining Engineering	200	2	CIVL281		
MINE231	Engineering Construction 2 (Mining)	200	2	CIVL192		
MINE241	Engineering Surveying 2 (Mining)	200	1		CIVL171	
CIVL213	Structural Design 1	200	2	CIVL111 *or* MECH122	CIVL251	
CIVL225	Engineering Mechanics 1	200	1	CIVL123		
CIVL226	Engineering Mechanics 2	200	2		CIVL281	
CIVL231	Hydraulics 1	200	2	MATH101		
CIVL243	Materials 2C	200	2		CIVL251	
CIVL251	Strength of Materials 1	200	1	CIVL122 *or* MECH101	CIVL281 *or* MATH281	
CIVL281	Computational Tech. in Civil Engineering 1	200	1	MATH101		
CIVL295	Experimental Engineering 1C	200	1	CIVL111, 122		
CIVL296	Excursions 2	200			Attending predominantly 200-level subjects	
ELEC291	Applied Electricity 1	200	3			
GEOL251	Geology for Mining Engineers 1	200	1		MINE241	Excludes GEOL101, GEOL111 and GEOL214
MECH241	Thermodynamics 1	200	1		MATH281	
200-Level Elective Subjects						
GEOL207	Geophysics	200	2	GEOL101, 102 *or* GEOL251		See Schedule A - Geology
GEOL208	Structural Geology and Geotectonics	200	1		GEOL201 *or* GEOL351	See Schedule A - Geology
GEOL212	Fossil & Nuclear Fuels	200	1	GEOL101, 102 *or* GEOL251		See Schedule A - Geology
GEOL213	Economic Geology & Exploration Geochemistry	200	2	GEOL201 *or* GEOL351		See Schedule A - Geology

Number	*Subject*	*Level*	*Session Offered*	*Pre-Requisite*	*Co-Requisite*	*Remarks*
300-Level Core Subjects						
MINE314	Professional Practice 3	300	2			
MINE342	Engineering Surveying 3 (Mining)	300	2	MINE241		
MINE351	Hydraulics 2 (Mining)	300	1	CIVL231		
MINE361	Mining Engineering 1A	300	1	MINE231		
MINE362	Mining Process Engineering	300	1		MINE361	
MINE363	Mining Economics	300	1		MINE361	
MINE364	Management of Mining Projects	300	2		MINE361	
MINE365	Simulation of Mining Operations	300	2		MINE361	
MINE366	Mining Equipment	300	2		MINE361	
MINE367	Mine Resources	300	2		MINE361	
MINE368	Market Preparation of Mining Products	300	2		MINE361	
300-Level Elective Subjects						
CIVL362	Soil Mechanics 1	300	1	CIVL251		
CIVL363	Soil Mechanics 2	300	2	CIVL362		
GEOL351	Geology for Mining Engineers 2	300	1	GEOL251		
GEOL307	Geophysics	300	2	See Schedule A - Geology		See Schedule A - Geology
GEOL308	Structural Geology and Geotectonics	300	1	See Schedule A - Geology	See Schedule A - Geology	See Schedule A - Geology
GEOL312	Fossil & Nuclear Fuels	300	1	See Schedule A - Geology		See Schedule A - Geology
GEOL313	Economic Geology and Exploration Geochemistry	300	2	See Schedule A - Geology		See Schedule A - Geology
400-Level Core Subjects						
MINE469	Mining Engineering 2A	400	1	MINE361		
MINE470	Mining Engineering 3	400	2	MINE469		
MINE491	Mining Engineering Thesis	400	3			
CIVL481	Engineering Management 1	400	1	Enrolled in predominantly 400-level subjects		
CIVL482	Engineering Management 2	400	2	Enrolled in predominantly 400-level subjects		

400-Level Elective Subjects

CIVL463	Foundation Engineering	400	1	CIVL363	
CIVL486	The Civil Engineer and the Environment	400	1	Enrolled in predominantly 400-level subjects	
CIVL488	Traffic Engineering & Transport	400	2	Enrolled in predominantly 400-level subjects	
CIVL491	Computer Applications in Civil Engineering 1	400	1	CIVL282, 383	
CIVL493	Public Health Engineering	400	1		CIVL488. Enrolled in predominantly 400-level subjects

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NOTE: GENERAL STUDIES

The subjects* on offer in 1978 are:

First Session

GENE431 Asia in the Twentieth Century, Part I

GENE012 Architecture, Part I

GENE014 A History of Modern Art, Part I

Second Session

GENE432 Asia in the Twentieth Century, Part II

GENE023 Architecture, Part II

GENE024 A History of Modern Art, Part II

*For details, see Description of Subjects - General Studies

SCHEDULE D

METALLURGY

Number	*Subject*	*Level*	*Session Offered*	*Pre-Requisite*	*Co-Requisite*	*Remarks*
(A) BACHELOR OF METALLURGY -- PART-TIME COURSE						
Note: For students enrolled prior to 1976 special programmes will be prescribed by the Department where appropriate. For additional details of subjects see Description of Subjects.						
						STAGE 1
MATH101	Mathematics IA	100	3	See Schedule A - Mathematics		See Schedule A - Mathematics
PHYS141	Fundamentals of Physics A	100	3		MATH101	See Schedule A - Physics
PHYS142	Fundamentals of Physics B	100	3		MATH101	See Schedule A - Physics
						STAGE 2
CHEM101	Chemistry IA	100	1			See Schedule A - Chemistry
MATH282	Mathematics IIM*	200	1	MATH101		
CHEM102	Chemistry IB	100	2	CHEM101		
METL121	Nature of Materials	100	2			
						STAGE 3
MATH233	Mathematics IIP	200	3		MATH201 *or* MATH282	
	Optional Subject in Computing**					
METL211	Thermodynamics 1	200	1 or 2	CHEM101		
METL241	Fluid Flow	200	1 or 2			
METL251	Structure of Metals 1	200	1 or 2	METL121		
METL252	Structure and Mechanical Properties 1	200	1 or 2	METL121		

					STAGE 4
CIVL111	Introduction to Design C	100	2		
CIVL122	Mechanics and Structures	100	1		
ELEC291	Applied Electricity 1	200	3		
METL231	Mechanics of Solids 1	200	1 or 2		
METL271	Transformations 1	200	1 or 2		
METL281	Extractive Metallurgy	200	1 or 2		METL211
METL311	Thermodynamics 2	300	1 or 2	METL211	
METL342	Heat Transfer	300	1 or 2	METL241	
					STAGE 5
CIVL216	Design M	200	3		
METL312	Electrochemical Processes	300	1 or 2	METL211	
METL321	Physics of Metals 1	300	1 or 2	METL121	
METL331	Mechanics of Solids 2	300	1 or 2	METL231	
METL341	Mass Transfer	300	1 or 2	METL241	
METL351	Structure of Metals 2	300	1 or 2	METL251	
METL361	Reaction Engineering 1	300	1 or 2	METL241, 281	
					STAGE 6
METL301	Ceramics	300	1 or 2	METL211, 251	
METL353	Thermomechanical Processing	300	1 or 2	METL351	
METL381	Extraction Engineering	300	1 or 2	METL311, 341, 342, 361	
METL391	Metallurgy Project 1	300	3	METL321, 331, 341, 342, 351	
METL481	Mineral Engineering	400	1 or 2	METL241, 281	
Option in 400-level Metallurgy Subjects***					

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* In consultation with Chairman of Department a student wishing to take the full Mathematics II may be permitted to do so and the additional work will be credited to option requirements.

** Normally this will be CHEM219 The Computer in Science.

***See list of 400-level Metallurgy subjects at the end of Schedule D.

Number	*Subject*	*Level*	*Session Offered*	*Pre-Requisite*	*Co-Requisite*	*Remarks*
(B) BACHELOR OF METALLURGY -- PART-TIME ACCELERATED COURSE						
						STAGE 1
MATH101	Mathematics IA	100	3	See Schedule A - Mathematics		See Schedule A - Mathematics
PHYS141	Fundamentals of Physics A	100	3		MATH101	See Schedule A - Physics
PHYS142	Fundamentals of Physics B	100	3		MATH101	See Schedule A - Physics
						STAGE 2
CHEM101	Chemistry IA	100	1			See Schedule A - Chemistry
MATH282	Mathematics IIM*	200	1	MATH101		
CHEM102	Chemistry IB	100	2	CHEM101		
METL121	Nature of Materials	100	2			
						STAGE 3
MATH233	Mathematics IIP	200	3		MATH201 *or* MATH282	
	Optional Subject in Computing**					
METL211	Thermodynamics 1	200	1 or 2	CHEM101		
METL241	Fluid Flow	200	1 or 2			
METL251	Structure of Metals 1	200	1 or 2	METL121		
METL252	Structure and Mechanical Properties 1	200	1 or 2	METL121		
						STAGE 4
CIVL111	Introduction to Design C	100	2			
CIVL122	Mechanics and Structures	100	1			
ELEC291	Applied Electricity I	200	3			
METL231	Mechanics of Solids 1	200	1 or 2			
METL271	Transformations 1	200	1 or 2			

METL281	Extractive Metallurgy	200	1 or 2		METL211
METL311	Thermodynamics 2	300	1 or 2	METL211	
METL342	Heat Transfer	300	1 or 2	METL241	
					YEAR 3
CIVL216	Design M	200	3		
METL301	Ceramics	300	1 or 2	METL211, 251	
METL312	Electrochemical Processes	300	1 or 2	METL211	
METL321	Physics of Metals 1	300	1 or 2	METL121	
METL331	Mechanics of Solids 2	300	1 or 2	METL231	
METL341	Mass Transfer	300	1 or 2	METL241	
METL351	Structure of Metals 2	300	1 or 2	METL251	
METL353	Thermomechanical Processing	300	1 or 2	METL351	
METL361	Reaction Engineering 1	300	1 or 2	METL241, 281	
METL381	Extraction Engineering	300	1 or 2	METL311, 341, 342, 361	
METL391	Metallurgy Project 1	300	3	METL321, 331, 341, 342, 351	
METL481	Mineral Engineering	400	1 or 2	METL241, 281	
Option in 400-level Metallurgy subjects***					

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* See footnote - Part-time course, Stage 2.
** Normally this will be CHEM219 The Computer in Science.
***See list of 400-level Metallurgy subjects at end of Schedule D.

(C) BACHELOR OF METALLURGY -- FULL-TIME COURSE

					YEAR 1
CIVL122	Mechanics and Structures	100	1		
CHEM101	Chemistry IA	100	1		See Schedule A - Chemistry
CIVL111	Introduction to Design C	100	2		
CHEM102	Chemistry IB	100	2	CHEM101	

Number	*Subject*	*Level*	*Session Offered*	*Pre-Requisite*	*Co-Requisite*	*Remarks*
MATH101	Mathematics IA	100	3	See Schedule A - Mathematics		See Schedule A - Mathematics
PHYS141	Fundamentals of Physics A	100	3		MATH101	See Schedule A - Physics
PHYS142	Fundamentals of Physics B	100	3		MATH101	See Schedule A - Physics
METL121	Nature of Materials	100	2			
						YEAR 2
MATH282	Mathematics IIM*	200	1	MATH101		
	Optional Subject in Computing**					
MATH233	Mathematics IIP	200	3		MATH201 *or* MATH282	
ELEC291	Applied Electricity I	200	3			
METL211	Thermodynamics 1	200	1 or 2	CHEM101		
METL231	Mechanics of Solids 1	200	1 or 2			
METL241	Fluid Flow	200	1 or 2			
METL251	Structure of Metals 1	200	1 or 2	METL121		
METL252	Structure and Mechanical Properties 1	200	1 or 2	METL121		
METL271	Transformations 1	200	1 or 2			
METL281	Extractive Metallurgy	200	1 or 2		METL211	
METL311	Thermodynamics 2	300	1 or 2	METL211		
						YEAR 3
CIVL216	Design M	200	3			
METL301	Ceramics	300	1 or 2	METL211, 251		
METL312	Electrochemical Processes	300	1 or 2	METL211		
METL321	Physics of Metals 1	300	1 or 2	METL121		
METL331	Mechanics of Solids 2	300	1 or 2	METL231		
METL341	Mass Transfer	300	1 or 2	METL241		
METL342	Heat Transfer	300	1 or 2	METL241		
METL351	Structure of Metals 2	300	1 or 2	METL251		

METL361	Reaction Engineering 1	300	1 or 2	METL241, 281	
METL391	Metallurgy Project 1	300	3	METL321, 331, 341, 342, 351	
	Option***				

YEAR 4

METL491	Metallurgy Project 2	400	3	METL391	
	400-Level Metallurgy Subjects****				
	Option***				

* See footnote - Part-time course, Stage 2.
** Normally this will be CHEM219 The Computer in Science.
*** See list of options at end of Schedule D.
**** See list of 400-level Metallurgy subjects at end of Schedule D.

(D) BACHELOR OF METALLURGY -- PART-TIME/FULL-TIME COURSE

STAGE 1

MATH101	Mathematics IA	100	3	See Schedule A - Mathematics		See Schedule A - Mathematics
PHYS141	Fundamentals of Physics A	100	3		MATH101	See Schedule A - Physics
PHYS142	Fundamentals of Physics B	100	3		MATH101	See Schedule A - Physics

STAGE 2

CHEM101	Chemistry IA	100	1		See Schedule A - Chemistry
MATH282	Mathematics IIM#	200	1	MATH101	
CHEM102	Chemistry IB	100	2	CHEM101	
METL121	Nature of Materials	100	2		

#See footnote - Part-time course, Stage 2.

Number	*Subject*	*Level*	*Session Offered*	*Pre-Requisite*	*Co-Requisite*	*Remarks*
						YEAR 2
CIVL122	Mechanics and Structures	100	1			
CIVL111	Introduction to Design C	100	2			
MATH233	Mathematics IIP	200	3		MATH201 *or* MATH282	
ELEC291	Applied Electricity I	200	3			
	Optional Subject in Computing*					
METL211	Thermodynamics 1	200	1 or 2	CHEM101		
METL231	Mechanics of Solids 1	200	1 or 2			
METL241	Fluid Flow	200	1 or 2			
METL251	Structure of Metals 1	200	1 or 2	METL121		
METL252	Structure and Mechanical Properties 1	200	1 or 2	METL121		
METL271	Transformations 1	200	1 or 2			
METL281	Extractive Metallurgy	200	1 or 2		METL211	
METL311	Thermodynamics 2	300	1 or 2	METL211		
						YEAR 3
CIVL216	Design M	200	3			
METL301	Ceramics	300	1 or 2	METL211, 251		
METL312	Electrochemical Processes	300	1 or 2	METL211		
METL321	Physics of Metals 1	300	1 or 2	METL121		
METL331	Mechanics of Solids 2	300	1 or 2	METL231		
METL341	Mass Transfer	300	1 or 2	METL241		
METL342	Heat Transfer	300	1 or 2	METL241		
METL351	Structure of Metals 2	300	1 or 2	METL251		
METL361	Reaction Engineering 1	300	1 or 2	METL241, 281		
METL391	Metallurgy Project 1	300	3	METL321, 331, 341, 342, 351		
	Option==					

METL491	Metallurgy Project 2	400	3	METL391
	400-Level Metallurgy Subjects#			
	Option##			

* Normally this will be CHEM219 The Computer in Science
# See List of 400-level Metallurgy Subjects below
##See List of Options below

LIST OF 400-LEVEL METALLURGY SUBJECTS - Additional Metallurgy subjects may also be available from time to time.

METL401	Metallurgical Resources	400	1 or 2	
METL421	Physics of Metals 2	400	1 or 2	METL321
METL431	Fracture	400	1 or 2	METL252, 331
METL441	Process Modelling	400	1 or 2	
METL451	Structure of Metals 3	400	1 or 2	METL351
METL452	Structure and Mechanical Properties 2	400	1 or 2	METL252, 331
METL453	Structure and Mechanical Properties 3	400	1 or 2	
METL461	Reaction Engineering 2	400	1 or 2	METL341, 361
METL471	Transformations 2	400	1 or 2	METL351
METL472	Solidification	400	1 or 2	METL341, 342
METL481	Mineral Engineering	400	1 or 2	METL241, 281
METL482	Iron and Steel Making	400	1 or 2	METL351

LIST OF OPTIONS - Subjects other than those offered by the Metallurgy Department.

Note: Additional subjects may be added from time to time and approval to include subjects not listed may be given by the Chairman of the Department of Metallurgy.

General Studies

See subjects listed in Schedule A - General Studies.

Department of Accountancy

ACCY160	Law in Society	100	1	

Number	*Subject*	*Level*	*Session Offered*	*Pre-Requisite*	*Co-Requisite*	*Remarks*
ACCY161	Business Law	100	2	ACCY160		
ACCY251	Taxation Law	200	2	ACCY160		
ACCY262	Industrial Law	200	1	ACCY160		
Department of Biology						
BIOL101	General and Human Biology	100	3			
Department of Chemistry						
CHEM211	Inorganic Chemistry II	200	2	CHEM102		See Schedule A - Chemistry
CHEM314	Analytical Chemistry II	300	2	CHEM214		See Schedule A - Chemistry
Department of Civil Engineering						
CIVL219	Experimental Stress Analysis	200	3		200-Level Subjects	
CIVL481	Engineering Management 1	400	1	Complete 90% -- 300-level		
CIVL482	Engineering Management 2	400	2	Complete 90% -- 300-level		
Department of Economics						
ECON111	Economics II	100	2			
ECON213	Microeconomics	200	1			
ECON312	Industrial Economics	300	2			
Department of Electrical Engineering						
ELEC293	Computers IM	200	3			See Schedule A - Electrical Engineering
Department of Geology						
GEOL101	Introductory Geology, Crystallography, Mineralogy, Petrology	100	1			See Schedule A - Geology
or						
GEOL111	Geology, Resources and the Environment I	100	1			See Schedule A - Geology

GEOL102	Physical Geology, Palaeontology and Stratigraphy, Mapping	100	2		See Schedule A - Geology
or					
GEOL112	Geology, Resources and the Environment II	100	2		See Schedule A - Geology
Department of Mechanical Engineering					
MECH363	Systems Analysis I	300	2		
MECH464	Systems Analysis II	400	1	Pre- or Co-requisite MECH363	

SCHEDULE E

SCIENCE

Set out below in Schedules E-1 and E-2 are the subjects that may be taken in the Science Course. Additional details relating to the subjects listed, such as co- and pre-requisites, are set out in Schedule A.

SCHEDULE E-1

SUBJECTS APPROVED BY THE FACULTY OF MATHEMATICS

Number	*Subject*	*Credit Points*	*Session Offered*
100-Level			
MATH101	Mathematics IA	12	3
MATH102	Mathematics IB	12	3
CSCI101	Computing Science I	12	3
GEOL101	Introductory Geology, Crystallography, Mineralogy, Petrology	6	1
GEOL102	Physical Geology, Palaeontology and Stratigraphy, Mapping	6	2
CHEM101	Chemistry IA	6	1
CHEM102	Chemistry IB	6	2
PHYS141	Fundamentals of Physics A	6	3
PHYS142	Fundamentals of Physics B	6	3
BIOL101	General and Human Biology	12	3
200-Level			
MATH201	Mathematics IIA	12	3
MATH211	Mathematics IIB	12	3
MATH221	Mathematics IIC	12	3
MATH231	Mathematics IID	12	3
CSCI201	Computing Science II	12	3
PHYS201	Intermediate Physics A	12	3
PHYS205	Modern Physics	6	3
PHYS215	Vibrations, Waves and Optics	6	3
PHYS225	Intermediate Electricity and Magnetism	6	3
PHYS235	Mechanics and Thermodynamics	6	3
300-Level			
MATH301	Mathematics IIIA	12	3
MATH302	Mathematics IIIB	12	3
MATH303	Mathematics IIIC	12	3
MATH311	Mathematics IIID	12	3
MATH321	Mathematics IIIE	12	3
MATH322	Mathematics IIIF	12	3
MATH331	Mathematics IIIG	12	3
MATH351	Ocean Dynamics	12	3
CSCI301	Computing Science IIIA	12	3
CSCI302	Computing Science IIIB	12	3
ACCY302	Accounting and Financial Management IIIA	12	1
ACCY312	Accounting and Financial Management IIIB	12	2
PHYS301	Classical Mechanics and Electromagnetism	6	1
PHYS311	Quantum and Statistical Mechanics	8	3
PSYC322	Social Psychology	6	1
PSYC336	Experimental Psychology	6	1
PSYC316	Individual Differences	6	2

Number	*Subject*	*Credit Points*	*Session Offered*
GEOG313	Coastal Geomorphology	12	1
400-Level			
MATH401	Mathematics IV (Honours)	48	3

SCHEDULE E-2

SUBJECTS APPROVED BY THE FACULTY OF SCIENCE

100-Level			
	BIOLOGY		
BIOL101	General & Human Biology	12	3
	CHEMISTRY		
CHEM101	Chemistry IA: Introductory Physical and General Chemistry	6	1
CHEM102	Chemistry IB: Introductory Organic and Physical Chemistry	6	2
	GEOGRAPHY		
GEOG192	The Physical Environment (Science)	6	2
	GEOLOGY		
GEOL101	Introductory Geology, Crystallography, Mineralogy, Petrology	6	1
GEOL102	Physical Geology, Palaeontology and Stratigraphy, Mapping	6	2
GEOL111	Geology, Resources and the Environment I	6	1
GEOL112	Geology, Resources and the Environment II	6	2
	PHYSICS		
PHYS141	Fundamentals of Physics A	6	3
PHYS142	Fundamentals of Physics B	6	3
PHYS151	The Art of Physics	6	2
	PSYCHOLOGY		
PSYC101	Psychology IA	6	1
PSYC102	Psychology IB	6	2
	MATHEMATICS		
MATH101	Mathematics IA	12	3
MATH102	Mathematics IB	12	3
CSCI101	Computing Science I	12	3
200-Level			
	BIOLOGY		
BIOL201	Bioenergetics I (Metabolism)	8	2
BIOL202	Bioenergetics II (Cell Physiology)	8	2
BIOL203	Bioenergetics III (Physiology)	8	1
BIOL204	Bioenergetics IV (Ecology)	8	2
BIOL211	Introductory Biochemistry	6	1
BIOL281	Evolution and Ecology of Man	6	2
GEOG291	Biogeography (Science)	6	1
CHEM213	Physical Chemistry II	6	1
ELEC294	Intro. Systems Theory	6	2
	CHEMISTRY		
CHEM211	Inorganic Chemistry II	6	2
CHEM212	Organic Chemistry II	6	1
CHEM213	Physical Chemistry II	6	1
CHEM214	Analytical Chemistry II	6	2

Number	*Subject*	*Credit Points*	*Session Offered*
CHEM219	The Computer in Science	6	3
	GEOGRAPHY		
GEOG291	Biogeography (Science)	6	1
	GEOLOGY		
GEOL201	Crystallography, Crystal Chemistry and Mineralogy	6	1
GEOL202	Igneous and Metamorphic Petrology	6	2
GEOL203	Principles of Geological Mapping	6	2
GEOL204	Palaeontology	6	2
GEOL205	Sedimentology	6	2
GEOL206	Stratigraphy and Stratigraphic Palaeontology*	6	1
GEOL207	Geophysics	6	2
GEOL208	Structural Geology and Geotectonics	6	1
GEOL210	Micropalaeontology	6	1
GEOL211	Basin Analysis and Oceanography	6	1
GEOL212	Fossil and Nuclear Fuels	6	1
GEOL213	Economic Geology and Exploration Geochemistry*	6	2
	PHYSICS		
PHYS201	Intermediate Physics A	12	3
PHYS205	Modern Physics	6	3
PHYS211	Intermediate Physics B	12	3
PHYS215	Vibrations, Waves and Optics	6	3
PHYS220	Intermediate Physics for Engineers	12	3
PHYS225	Intermediate Electricity and Magnetism	6	3
PHYS235	Mechanics and Thermodynamics	6	3
PHYS244	Modern Physics, Vibrations, Waves and Optics	8	3
PHYS248	Astronomy	6	3
	MATHEMATICS		
MATH201	Mathematics IIA	12	3
MATH202	Mathematics IIS	6	3
MATH211	Mathematics IIB	12	3
MATH231	Mathematics IID	12	3
MATH233	Mathematics IIP	6	3
300-Level			
	BIOLOGY		
BIOL301	Bioenergetics I (Metabolism)	8	2
BIOL302	Bioenergetics II (Cell Physiology)	8	2
BIOL303	Bioenergetics III (Physiology)	8	1
BIOL304	Bioenergetics IV (Ecology)	8	2
BIOL381	Evolution and Ecology of Man	6	2
BIOL391	Advanced Biology	16	2
MATH334	Design and Analysis	6	3
	CHEMISTRY		
CHEM311	Inorganic Chemistry III	8	1
CHEM312	Organic Chemistry IV	16	3
CHEM314	Analytical Chemistry III	8	2

*May not be offered in 1978

Number	*Subject*	*Credit Points*	*Session Offered*
CHEM323	Physical Chemistry III	8	1
CHEM324	Theoretical Chemistry	8	2
	GEOGRAPHY		
GEOG391	Fluvial Geomorphology (Science)	12	2
GEOG393	Coastal Geomorphology (Science)	12	1
	GEOLOGY		
GEOL301	Advanced Crystallography, Crystal Chemistry and Mineralogy*	6	1
GEOL302	Advanced Igneous and Metamorphic Petrology	6	1
GEOL303	Advanced Geological Mapping and Geomorphology	6	1
GEOL304	Palaeontology	6	2
GEOL305	Sedimentology	6	2
GEOL306	Stratigraphy and Stratigraphic Palaeontology*	6	1
GEOL307	Geophysics	6	2
GEOL308	Structural Geology and Geotectonics	6	1
GEOL309	Mathematical Methods in Geology*	6	1
GEOL310	Micropalaeontology	6	1
GEOL311	Basin Analysis and Oceanography	6	1
GEOL312	Fossil and Nuclear Fuels	6	1
GEOL313	Economic Geology and Exploration Geochemistry*	6	2
	MATHEMATICS		
MATH301	Mathematics IIIA	12	3
MATH302	Mathematics IIIB	12	3
MATH351	Ocean Dynamics	12	3
MATH334	Design and Analysis	6	3
	PHYSICS		
PHYS301	Classical Mechanics and Electromagnetism	6	1
PHYS302	Classical Mechanics, Electromagnetism and Plasma Physics	8	1
PHYS309	Advanced Experimental Physics	12	3
PHYS311	Quantum and Statistical Mechanics	8	3
PHYS312	Advanced Experimental Physics with Electronics	16	3
PHYS315	Quantum Mechanics and Statistical Mechanics with Electronics	12	3
PHYS321	Astro-, Nuclear and Solid State Physics	6	2
PHYS322	Astro-, High Energy, Nuclear and Solid State Physics	8	2
PHYS348	Astronomy	6	3
	PSYCHOLOGY		
PSYC342	Social Psychology (Science)	6	1
PSYC343	Industrial & Organizational Psych (Science)	6	2
PSYC346	Experimental Psychology (Science)	6	1
PSYC348	Behaviour Modification (Science)	6	2
MATH334	Design and Analysis	6	3
400-Level			
	BIOLOGY		
BIOL401	Biology Honours	48	3

*May not be offered in 1978

Number	*Subject*	*Credit Points*	*Session Offered*
	CHEMISTRY		
CHEM411	Selected Topics in Chemistry	16	3
CHEM420	Chemistry Honours Project	32	3
	GEOLOGY		
GEOL401	Geology Honours	48	3
	PHYSICS		
PHYS401	Theoretical Mechanics and Electromagnetism	8	1
PHYS410	Honours Project	18	3
PHYS441	Astro- and Nuclear Physics	8	3
PHYS443	Quantum Mechanics and Statistical Mechanics	12	3
PHYS446	Solid State Physics	8	3
PHYS455	Nuclear and Solid State Physics	12	3
PHYS465	Astro- and Solid State Physics	12	3

DEFINITIONS

The terms used to categorize publications listed in the Description of Subjects section have been defined as follows:

TEXTBOOK

A textbook is a publication considered an essential aid in the study of a subject. A student is required to have a textbook available for regular reference in class and during private study.

(The textbooks listed in this Calendar may be purchased from the University Co-operative Bookshop.)

PRELIMINARY READING

Publications listed under the heading - *PRELIMINARY READING* - supply the background knowledge required by a student *before* he can properly understand and participate in the classes conducted in a subject or in certain parts of a subject.

RECOMMENDED READING

Publications listed under the heading - *RECOMMENDED READING* - supplement the textbooks by providing more extensive and/or intensive information and comment on the subject or certain aspects of it.

NOTE: Publications additional to those listed in this Calendar under *PRELIMINARY* or *RECOMMENDED READING* may be recommended by tutors and lecturers during the year.

Students *are not required* to purchase publications listed as *PRELIMINARY READING* or *RECOMMENDED READING* but may be advised, in some cases, to own major references. These publications are available for borrowing and/or for consultation in the University Library.

DESCRIPTION OF SUBJECTS

ACCOUNTANCY

The Accountancy Department offers a three-year sequence of subjects which may be studied full time or part time, for the BA or BCom degrees. The accountancy content necessary in order to obtain "a substantial and coherent study at 300-level" for a BA degree is somewhat less than that prescribed for the BCom degree in accountancy. Students with good academic records, particularly in third year, are encouraged to enrol in the Honours degree, completion of which requires a further year of full time study or equivalent. Studies may also be undertaken for the MCom degree which, for students holding an Honours degree, requires a further year of full time study, and may include additional subjects or a thesis. A graduate Diploma in Accountancy, comprising one year of full time study or equivalent, is also available for graduates from other disciplines or for accountancy students wishing to take further subjects from the Department.

The sequence of accounting subjects is designed to provide a comprehensive understanding of the conceptual basis of accounting and the application of these ideas to the management and accountability of both business and government enterprises. Concurrent studies in law give a broad introduction to the legal environment - a necessity for today's managers in commerce and industry.

Throughout the subjects emphasis is upon mastery of ideas and stimulation of ability, thus providing a foundation for personal and professional development. While a BCom degree course including appropriate accounting and legal subjects is a suitable preparation for entry into the accountancy profession, the scope and orientation is much broader than for this purpose alone.

In addition to the two main streams of financial accounting (external financial reporting) and management accounting (internal financial reporting), advanced courses in business finance, information systems in accounting, taxation and legal studies, together with other electives are offered, subject to availability of staff and student demand. Students are also encouraged to complement their main area of study by selection of relevant subjects from other departments, particularly Economics, Mathematics including Computing Science, Psychology and Sociology. A combined specialisation in Accountancy and Economics is available for the BCom degree.*

SCHEDULE ENTRIES

Refer to Schedules A and B for approved details of the subjects described in this section. Subjects which also appear in other schedules are:

Subject	*Schedule*
ACCY160	D
ACCY161	D
ACCY251	D
ACCY262	D
ACCY302	E-1
ACCY312	E-1

100-LEVEL

ACCY100 ACCOUNTING AND FINANCIAL MANAGEMENT IA

Lectures per week - 2; Tutorials per week - 1; Workshop per week - 1
Assessment: assignments, essay(s) and examination(s)

The basic concepts of financial model building and information systems, including the double-entry recording system, the accounting cycle, income measurement and financial reporting and an introduction to basic elements of taxation and auditing.

TEXTBOOKS

Carrington, A.S., Battersby, G.B. & Howitt, G. *Accounting - An Information System.* Whitcombe & Tombs, 1975.
Thacker, R.J. *Accounting Principles.* Prentice-Hall, 1976.

RECOMMENDED READING

Barton, A.D. *The Anatomy of Accounting.* Uni. Qld. Press, 1977.
Colditz, B.T., Gibbins, R.W., Meigs, W.B., Johnson, C.F. & Mosich, A.N. *Australian Accounting.* McGraw-Hill, 1976.
Lindgren, K.E. & Aislabie. *The Australian Firm.* McGraw-Hill, 1976.
Mathews, R. *The Accounting Framework.* Cheshire, 1971.

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*It is anticipated that the Bachelor Degree Requirements will be amended to provide for this combined specialisation. Students are advised to contact the Department or the Student Enquiries Office for further details.

ACCY110 ACCOUNTING AND FINANCIAL MANAGEMENT IB

Lectures per week - 2; Tutorials per week - 1; Workshop per week - 1.
Assessment: assignments, essay(s) and examination(s).

Development of basic concepts introduced in *Accounting and Financial Management IA* including management accounting and operations research, corporate reporting, business finance, system design, elementary computer programming and applications.

TEXTBOOKS AND RECOMMENDED READING

As for *Accounting and Financial Management IA.*

ACCY160 LAW IN SOCIETY

Lectures per week - 2; Tutorials per week - 1.
Assessment: assignments, essay(s) and examination(s).

An introduction to the nature of law, the legal system, legal reasoning and the administration of justice, including the commercial, sociological and political implications of the legal environment.

TEXTBOOKS

Lane, P.H. *An Introduction to the Australian Constitution.* Law Book Co., 1974.
Lloyd, D. *The Idea of Law.* Pelican, 1969.
Sawer, G. *The Australian and the Law.* Pelican, 1971.
Vermeesch, R.B. & Lindgren, K.E. *Business Law in Australia.* 2nd ed. Butterworth, 1973.

RECOMMENDED READING

Derham, D.P., Maher, F.K.H., Waller, P.L. *An Introduction to Law.* 3rd ed. The Law Book Company, 1977.
Enright, C. *Constitutional Law.* The Law Book Co., 1977.
Fleming, J.G. *The Law of Torts.* 5th ed. The Law Book Co., 1977.
Friedmann, W. *Law in a Changing Society.* Latest Penguin ed.
Street, H. *Freedom, The Individual and the Law.* Latest Pelican ed.
Williams, G. *Learning the Law.* 9th ed. with Australian Supplement. Stevens, 1973.

ACCY161 BUSINESS LAW I

Lectures per week - 2; Tutorials per week - 1.
Assessment: assignments, essay(s) and examination(s).

Business law, including law of contract, bailment, trusts, agency, partnership, bankruptcy, sale of goods and hire purchase.

TEXTBOOKS

Vermeesch, R.B. & Lindgren, K.E. *Business Law in Australia.* 2nd ed. Butterworth, 1973.
Partnership Act (N.S.W.) 1892. Government Printer, Sydney.
Sale of Goods Act (N.S.W.) 1923 (as amended). Government Printer, Sydney.

RECOMMENDED READING

Borrie, G. & Diamond, A.L. *The Consumer Society and the Law.* Latest Pelican ed.
Lowe, R. *Sale of Goods and Hire Purchase.* Latest Penguin ed.
McGarvie, R.E., Pannam, C.L., Hocker, P.J. *Cases and Materials on Contract.* 3rd ed. The Law Book Co., 1975.
Starke, J.G. & Higgins, P.F.P. *Cheshire and Fifoot The Law of Contract.* 3rd Australian ed. Butterworths, 1974.

200-LEVEL

ACCY214 ACCOUNTING AND FINANCIAL MANAGEMENT IIA

Lectures per week - 2; Tutorials per week - 2.
Assessment: assignments, essay(s) and examination(s).

The design, production and use of accounting and other quantitative information in the planning and control of organisations, with particular reference to manufacturing activities and to long and short-term decision-making and financial planning.

ACCY214 ACCOUNTING AND FINANCIAL MANAGEMENT IIA (CONT'D)

TEXTBOOKS

Chase, R.B. & Aquilano, N.J. *Production and Operations Management.* Rev. ed., Irwin, 1977.
Dopuch, N., Birnberg, J.G. & Kemski, J. *Cost Accounting.* 2nd internat. ed. Harcourt Brace Jovanovich Inc., 1974.
Horngren, C.T. *Cost Accounting: A Managerial Emphasis. 4th ed.* Prentice-Hall, 1977.

ACCY204 ACCOUNTING AND FINANCIAL MANAGEMENT IIB

Lectures per week - 2; Tutorials per week - 2.
Assessment: assignments, essay(s) and examination(s).

A critical examination of concepts and problems in income measurement and financial reporting for various forms of undertaking with particular reference to corporate organisations, including associated aspects of auditing and taxation.

TEXTBOOKS

Johnston, T.R., Jager, M.O. & Taylor, R.B. *Company Accounting.* Rev. 3rd ed. Butterworth, 1977.
Taylor, R.B. & O'Shea, B.P. *Questions on Company Accounting.* Butterworth, 1977.
The Companies Act 1961 (as amended). Government Printer, Sydney.

RECOMMENDED READING

Ryan, J.B., Heazlewood, C.T. & Andrew, B.H. *Australian Company Financial Reporting - 1976.* Australian Accounting Research Foundation, 1977.
Yorston, K., Smyth, E.B., & Brown, S.R. *Advanced Accounting.* 6th ed. The Law Book Co., 1974.

ACCY212 BUSINESS ORGANISATION AND POLICY

Lectures per week - 2; Tutorials per week - 1.
Assessment: assignments, essay(s) and examination(s).

The relationship of organisation theories and behavioural considerations to the functions of management and of accounting, with particular reference to organisation structures, communication, motivation, inter-personal and inter-group relationships and decision processes. Corporate strategy, policy formulation and integration of business functions.

TEXTBOOKS

Albanese, R. *Management: Toward Accountability for Performance.* Richard D. Irwin, 1975.
Carroll, S.J. Jr., Paine, F.T. & Miner, J.B. *The Management Process: Cases and Readings.* Macmillan, 1973.
Miner, J.B. *The Management Process: Theory, Research and Practice.* Macmillan, 1973.

ACCY224 BUSINESS FINANCE

Lectures per week - 2; Tutorials per week - 1.
Assessment: assignments, essay(s) and examination(s).

The finance function, with particular reference to corporate financing, financial policy and financial management including aspects of Australian financial institutions and the development of theories of financial structure.

TEXTBOOKS

Cohan, A.B. & Wyman, H.E. *Cases in Financial Management.* Prentice-Hall, 1972.
Van Horne, J.C. *Financial Management & Policy.* 3rd ed. Prentice-Hall International, 1975.

RECOMMENDED READING

Peirson, G. & Bird, R. *Business Finance.* McGraw-Hill, 1976.

ACCY234 INFORMATION SYSTEMS IN ACCOUNTING

Lectures per week - 2; Tutorials per week - 1.
Assessment: assignments, essay(s) and examination(s).

Management information systems, including data collection and processing, internal control and internal reporting. System design and computer applications.

ACCY234 INFORMATION SYSTEMS IN ACCOUNTING (CONT'D)

TEXTBOOKS

Couger, J.D. & McFadden, F.R. *Introduction to Computer Based Information Systems.* Wiley, 1975.
Sanders, D.H. *Computers in Business: An Introduction.* 2nd ed. McGraw-Hill, 1972.

ACCY254 TAXATION LAW

Lectures per week - 2; Tutorials per week - 1.
Assessment: assignments, essay(s) and examination(s).

Income tax law and practice.

TEXTBOOKS

Mannix, E.F. & Harris, D.W. *Australian Income Tax Guide.* 23rd ed. Butterworth, 1977.
Mason, H.H., Dixon, J., & Priddle, L.G. *Case Companion to Ryan's Income Tax Manual.* Law Book Co., 1976.
Ryan, K.W. *Manual of the Law of Income Tax in Australia.* 4th ed. Law Book Co., 1976.
Income Tax Assessment Act, 1936-1975. Australian Government Printer.

RECOMMENDED READING

Barrett, R. *Principles of Income Taxation.* Butterworths, 1975.

ACCY262 INDUSTRIAL LAW

Lectures per week - 2; Tutorials per week - 1.
Assessment: assignments, essay(s) and examination(s).

An examination of the Commonwealth and State systems, the relationship between them and the effect on industrial relations of the Australian Federal system; with particular reference to the constitution of the tribunals, their respective powers and the effect of awards, agreements and other regulatory activities.

TEXTBOOKS

Cullen, C.L. & Macken, J.J. *An Outline of Industrial Law.* 4th ed. Law Book Co., 1976.
Isaac, J.E. & Ford, G.W. eds. *Australian Labour Relations: Readings.* 2nd ed. Sun Books, 1971.
Macken, J.J. *Australian Industrial Law.* Law Book Co., 1974.
O'Dea, R. *Industrial Relations in Australia.* 3rd ed. West, 1974.

RECOMMENDED READING

Mills, C.P. *Workers Compensation (NSW).* Butterworths, 1969.
Mills, C.P. & Sorrell, G.N. *Federal Industrial Law* - with updating *Industrial Laws Service* (separate vol.) 5th ed. Butterworths, 1975.
Sykes, E.I., Glasbeek, H.J. *Labour Law in Australia.* Butterworths, 1972.
Wynes, W.A. *Legislative, Executive and Judicial Powers in Australia.* 5th ed. The Law Book Co., 1976.

ACCY263 ADMINISTRATIVE LAW

Lectures per week - 2; Tutorials per week - 1.
Assessment: assignments, essay(s) and examination(s).

The role of administration in controlling relationships between individuals, the state and public authorities, including the constitutional setting; legislation and delegated legislation; "Henry VIII" clauses, privative clauses; rules of natural justice, judicial review of administrative action, prerogative writs; injunctions and declaratory judgments; administrative tribunals; public authorities; legal position of the Crown; privilege; Ombudsmen, etc.

TEXTBOOKS

Benjafield, D.G. & Whitmore, H. *Principles of Australian Administrative Law.* 4th ed. The Law Book Co., 1971.
Brett, P. & Hogg, P.W. *Cases and Materials on Administrative Law.* 3rd ed. Butterworths, 1975.
Commonwealth Administrative Review Committee Report. August 1971, Parliamentary Paper No.144, 1971, Commonwealth Government Printing Office.

RECOMMENDED READING

Interim Report of the Committee on Administrative Discretions, January 1973. Attorney-General's Department, Australian Government Publishing Service, 1973.
Committee on Administrative Discretions Final Report. October 1973, Parliamentary Paper No.316, 1973, The Government Printer of Australia, 1975.

ACCY302 ACCOUNTING AND FINANCIAL MANAGEMENT IIIA (CONT'D)

TEXTBOOKS

Hendriksen, E.S. *Accounting Theory.* 3rd ed. Irwin, 1977.
Johnston, T.R., Jager, M.O. & Taylor, R.B. *Company Accounting.* Rev. 3rd ed. Butterworth, 1977.
Keller, T.F. & Zeff, S.A. eds. *Financial Accounting Theory II: Issues and Controversies.* McGraw-Hill, 1969.
Zeff, S.A. & Keller, T.F. eds. *Financial Accounting Theory I: Issues and Controversies.* 2nd ed. McGraw-Hill, 1973.
The Companies Act 1961 (as amended). Government Printer, Sydney.
The Institute of Chartered Accountants in Australia. *Statements of Accounting Standards and Statements on Accounting Practice and (current) Preliminary Exposure Drafts.* Sydney.

RECOMMENDED READING

Henderson, S. & Peirson, G. *Issues in Financial Accounting.* Cheshire, 1975.
Ryan, J.B., Heazlewood, C.T., Andrew, B.H. *Australian Company Financial Reporting - 1975.* Australian Accounting Research Foundation, 1977.

ACCY303 SELECTED ISSUES IN FINANCIAL ACCOUNTING

Seminars per week - 2; Tutorials per week - 1.
Assessment: assignments, essay(s) and examination(s).

Selected issues in external reporting, including issues in international accounting and comparative accounting standards.

TEXTBOOKS

As for Accounting & Financial Management IIIA.
plus
Bedford, N.M. *Income Determination Theory: An Accounting Framework.* Addison-Wesley, 1965.
Berg, K.B., Mueller, G.G. & Walker, L.M. eds. *Readings in International Accounting.* Houghton Mifflin Co., Boston, 1969.
Cowan, T.K. & Kenley, W.J. *Case Studies in Financial Accounting.* Butterworths, 1975.

RECOMMENDED READING

As for Accounting and Financial Management IIIA.

ACCY312 ACCOUNTING AND FINANCIAL MANAGEMENT IIIB

Lectures per week - 2; Tutorials per week - 2.
Assessment: assignments, essay(s) and examination(s).

Management Accounting: An advanced treatment of management accounting theory and applications including statistical cost analysis, cost accounting control systems, budgetary and strategic planning and decision models.

TEXTBOOKS

Dopuch, N., Birnberg, J.G. & Demski, J. *Cost Accounting.* 2nd Int. ed. Harcourt Brace Jovanovich Inc., 1974.
Horngren, C.T. *Cost Accounting: A Managerial Emphasis.* 4th ed. Prentice-Hall, 1977.
Miller, D.W. & Starr, M.K. *Structure of Human Decisions.* Prentice-Hall, 1967.
Rappaport, A. ed. *Information for Decision Making.* 2nd ed. Prentice-Hall, 1975.

ACCY313 SELECTED ISSUES IN MANAGEMENT ACCOUNTING

Seminars per week - 2; Tutorials per week - 1.
Assessment: assignments, essay(s) and examination(s).

Selected issues in management accounting, including international management accounting.

TEXTBOOKS

As for Accounting & Financial Management IIIB.
plus
Anthony, R.N., Dearden, J. & Vancil, R.F. *Management Control Systems.* 3rd ed. Irwin, 1976.

ACCY322 ADVANCED BUSINESS FINANCE

Lectures per week - 2; Tutorials per week - 1.
Assessment: assignments, essay(s) and examination(s).

Advanced aspects of corporate financial management, growth strategies, combinations and reorganisations; theories and models of capital structure and cost of capital.

TEXTBOOKS

No prescribed textbooks.

ACCY332 ADVANCED INFORMATION SYSTEMS IN ACCOUNTING

Lectures per week - 2; Tutorials per week - 1.
Assessment: assignments, essay(s) and examination(s).

Advanced aspects of communication and information theory, system evaluation, design, implementation and management, accounting and associated computer applications, and software development.

TEXTBOOKS

No prescribed textbooks.

ACCY342 ADVANCED AUDITING

Lectures per week - 2; Tutorials per week - 1.
Assessment: assignments, essay(s) and examination(s).

Advanced aspects of auditing, including auditing standards and responsibilities, problems of valuation and verification, organisation and application to various forms of accounting systems including computer systems, and investigations.

TEXTBOOKS

Fraser, D.J. & Aiken, M.E. *Stettler's Systems Based Audits.* Prentice-Hall, 1977.
Mautz, R.K. & Sharaf, H.A. *The Philosophy of Auditing.* American Accounting Association, 1961.
Newton, S.W. & Stettler, H.F. *Practice Case for Auditing.* Prentice-Hall, 1966.

RECOMMENDED READING

Irish, R.A. *Auditing.* 4th ed. Law Book Co., 1972.
Meigs, W.B., Larsen, E.J. & Meigs, R.F. *Principles of Auditing.* 5th ed. Richard D. Irwin, 1973.

ACCY352 ADVANCED TAXATION LAW

Lectures per week - 2; Tutorials per week - 1.
Assessment: assignments, essay(s) and examination(s).

Advanced aspects of taxation law, and an examination of other taxes including sales tax, stamp duty, payroll tax, death duty and estate duty.

TEXTBOOKS

Income Tax Assessment Act 1936-74. Australian Government Printer, Canberra.
Income Tax (International Agreements) Act 1953-69.
Irving, H.R. *The Value on which Sales Tax is Payable.* Taxation Institute of Australia, 1965.
Mannix, E.F. & Harris, D.W. *Income Tax Guide.* Butterworth.
Sweeney, C.A. & Telfer, J.H. *Revenue Law In Australia.* Butterworths, 1975.

RECOMMENDED READING

Barrett, R. *Principles of Income Taxation.* Butterworths, 1975.
Mason, H.H., Dixon, J. & Priddle, L.G. *Case Companion to Ryan's Income Tax Manual.* Law Book Co., 1976.
Ryan, K.W. *Manual of the Law of Income Tax in Australia.* 4th ed. Law Book Co., 1976.

ACCY363 ADMINISTRATIVE LAW

All details as for ACCY263 Administrative Law.

COMPULSORY SUBJECTS FOR HONOURS DEGREE

400-LEVEL

ACCY403 ACCOUNTING THEORY

Seminars per week - 2.
Assessment: seminars, essay(s) and examination(s).

The nature of research, theory formation and validation. The nature of accounting. A study of the methods used in accounting theory formation, and of attempts to formulate theories of accounting.

*TEXTBOOKS**

No prescribed textbooks.

ACCY404 CURRENT DEVELOPMENTS IN ACCOUNTING THOUGHT - FINANCIAL

Seminars per week - 2.
Assessment: seminars, essay(s) and examination(s).

Review of objectives and functions of external reporting with particular reference to problems of periodic income measurement, value and valuation and communication. Evaluation of accounting measurement and valuation methods, including historical cost, general price level accounting, current value and relative price change accounting models. Contemporary developments in accounting thought arising from alterations in social attitudes, the law and professional pronouncements.

*TEXTBOOKS**

No prescribed textbooks.

ACCY413 CURRENT DEVELOPMENTS IN ACCOUNTING THOUGHT - MANAGERIAL

Seminars per week - 2.
Assessment: seminars, essay(s) and examination(s).

The conceptual basis of managerial accounting and information systems. Management systems and the management process. Business objectives: multiple and conflicting goals. Qualification of objectives. Information theory and communication within organizations. Developments in decision models, project and period planning, budgetary models and control systems, and measurement of performance, including motivation and behavioural considerations.

*TEXTBOOKS**

No prescribed textbooks.

ACCY493 RESEARCH ESSAY

Information may be obtained from the Departmental Chairman.

OPTIONAL SUBJECTS FOR HONOURS DEGREE

ACCY405 INTERNATIONAL ACCOUNTING

Seminars per week - 2.
Assessment: seminars, essay(s) and examination(s).

Differences in accounting thought and standards between countries. Influence of national outlook and policies and of economic infra-structure on accounting practice. Accounting developments in State-controlled economies and in developing countries. Comparative study of accounting in developed nations. Uniform systems of accounting. Corporate growth and its impact on accounting and auditing. Comparative study of auditing and reporting standards, and international aspects of public accounting practice. The multi-national corporation. The effect of changing price levels on accounting for international operations.

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*Reading is required from a wide variety of references, including books and journal articles. Specific recommendations may be obtained from the Accountancy Department.

ACCY405 INTERNATIONAL ACCOUNTING (CONT'D)

*TEXTBOOKS**

No prescribed textbooks.

ACCY406 ISSUES IN FINANCIAL ACCOUNTING AND REPORTING

Seminars per week - 2.
Assessment: seminars, essay(s) and examination(s).

Contemporary issues in the field of financial accountability to external parties, particularly in respect of corporate organisations. Legal, institutional and professional reporting requirements. Financial accounting aspects of short term assets including inventories and long-lived assets and liabilities including intangibles, leases, pensions, long service leave and tax allocation. Proposals for improvement in external reporting.

*TEXTBOOKS**

No prescribed textbooks.

ACCY414 MANAGEMENT PLANNING AND CONTROL

Seminars per week - 2.
Assessment: seminars, essay(s) and examination(s).

Planning and control problems of decentralized organizations. Budgeting for and control of expense centres, plants and profit centres. Evaluation of managerial performance. Non-profit measures of performance. Inter-divisional arrangements. Internal profit measurement and transfer pricing. Administration of the capital budget. Organization, staffing and appraisal of the accounting and information services.

*TEXTBOOKS**

No prescribed textbooks.

ACCY423 INVESTMENT ANALYSIS AND MANAGEMENT

Seminars per week - 2.
Assessment: seminars, essay(s) and examination(s).

The theory of optimal investment decisions. Cost of capital. Introduction to portfolio theory and capital markets. Portfolio analysis. Sources of investment information. Investment media and strategies. Analysis of corporate performance and securities.

*TEXTBOOKS**

No prescribed textbooks.

ACCY453 STUDIES IN TAXATION

Seminars per week - 2.
Assessment: seminars, essay(s) and examination(s).

The statutory and common law foundations of the Federal income tax system. Common Law concepts of income and capital and statutory modifications and interpretations of these concepts. Legal and accounting approaches to taxable income. Tax and estate planning concepts. Tax avoidance and evasion. Tax incidence and equity. An examination of tax policies, provisions and problems relating to special entities - companies, partnerships, trusts, superannuation schemes - and special provision areas, such as primary producers, mining and petroleum industries, non-residence, foreign-controlled companies and royalty provisions. International aspects of Australian income tax including double tax agreements.

*TEXTBOOKS**

No prescribed textbooks.

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*Reading is required from a wide variety of references, including books and journal articles. Specific recommendations may be obtained from the Accountancy Department.

ACCY473 HISTORY AND DEVELOPMENT OF ACCOUNTING THOUGHT

Seminars per week - 2.
Assessment: seminars, essay(s) and examination(s).

An examination of the environmental factors and processes by which accounting thought, practices and institutions originated and developed in the ancient, mediaeval and modern eras. Ancient accounts. Special-purpose account-keeping in the Middle Ages. Philosophy, influence and constraints of the double-entry system. Development of basic concepts of continuity, accrual accounting and limited liability. Impact of the Industrial Revolution and changing corporate environments on accounting development. Legislative and institutional influences on accounting. Origin and development of educational and professional accountancy bodies and their influence on the development of accounting thought. Historical development of modern cost accounting.

*TEXTBOOKS**

No prescribed textbooks.

ACCY483 SPECIAL TOPIC A

Seminars per week - 2.
Assessment: seminars, essay(s) and examination(s).

A special topic to be selected from any area of financial accounting, management accounting, business finance, commercial law, government accounting, or information systems.
(N.B. The selection would be made by the Departmental Chairman taking into account the expertise of academic staff, including visiting staff, and the interest of students).

*TEXTBOOKS**

No prescribed textbooks.

ACCY484 SPECIAL TOPIC B

Seminars per week - 2.
Assessment: seminars, essay(s) and examination(s).

A special topic to be selected from any area of financial accounting, management accounting, business finance, commercial law, government accounting, or information systems.
(N.B. The selection would be made by the Departmental Chairman taking into account the expertise of academic staff, including visiting staff, and the interest of students).

*TEXTBOOKS**

No prescribed textbooks.

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*Reading is required from a wide variety of references, including books and journal articles. Specific recommendations may be obtained from the Accountancy Department.

BIOLOGY

The Department of Biology offers a first year course which assumes no previous experience in biology. This course is intended to provide both a general biological education for those who do not proceed further in the subject, as well as an adequate background for those who do. At the present time, the second and third year syllabus deals largely with biochemistry, physiology and ecology with emphasis on biological energetics and, to some extent, on environmental biology. Honours and higher degree research projects can be undertaken within the general areas of animal physiology, microbial physiology, ecology and photosynthesis.

Expansion of the Department will extend the scope of the syllabus and the range of specialization within the Department, but emphasis will continue to be placed on functional rather than descriptive biology. Career opportunities exist in most of the major outlets for graduates in the biological sciences.

Biological Energetics (200- and 300-level). This strand is the core of what will eventually be the full course in biology at 200- and 300-level. It is given as four subject units which, subject to completing the relevant pre-requisites, can be taken at 200- or 300-level. Normally however, Bioenergetics I and II will be taken at 200-level, Bioenergetics III and IV at 300-level. Any variation of that arrangement will require permission of the Chairman of the Department of Biology.

The Department of Biology should be consulted for supplementary references for all subjects.

General Statement of Assessment Methods

Students are assessed on performance in practical work, written assignments, short written examinations during the session and one two- or three-hour written examination at the end of each session.

SCHEDULE ENTRIES

Refer to Schedules A and E-2 for approved details of the subjects described in this section. The following subject also appears in the schedules shown below:

Subject	*Schedules*
BIOL101	D & E-1

100-LEVEL

BIOL101 GENERAL AND HUMAN BIOLOGY

84 hrs lectures, 28 hrs tutorials and 56 hrs practical

Syllabus: Characteristics of living organisms. Properties of living matter. Cell structure and function: Life cycles. An introduction to biochemistry, ultrastructure, genetics and cytology. Plant structure and function. Physiology of vertebrate animals. Human biology and variation. The biology of microorganisms. Evolution. Anatomy and histology of selected animals. Practical work to illustrate the lecture course.

TEXTBOOKS

Abercrombie, M., Hickman, C.J. & Johnson, M.L. *A Dictionary of Biology.* Penguin.
Keeton, W.T. *Biological Science.* 2nd ed. Norton, N.Y.

Requirements for Practical Work: Students will be notified of equipment required for practical work. This must be purchased before the first practical class.

200-LEVEL

CHEM213 PHYSICAL CHEMISTRY II

This subject is required for a major sequence in Biology. Refer to "Description of Subjects - Chemistry".

ELEC294 INTRODUCTORY SYSTEMS THEORY

A course given by the Department of Electrical Engineering primarily for Biology students and is recommended for progression in Biology.

Refer to "Description of Subjects - Electrical Engineering".

GEOG291 BIOGEOGRAPHY (SCIENCE)

Refer to "Description of Subjects - Geography."

BIOL201 BIOENERGETICS I (METABOLISM)

28 hrs lectures, 56 hrs practical/tutorial

Cellular methods of energy conservation (oxidation-reduction potentials, electro-chemical gradients, "high energy" compounds). Phosphorylation mechanisms (Photophosphorylation, oxidative phosphorylation, substrate-level phosphorylation). Aerobic energy metabolism in autotrophic and heterotrophic organisms. Anaerobic metabolism in autotrophic and heterotrophic organisms. Regulation of energy metabolism. Energy requirements for biosynthesis and growth.

TEXTBOOK

Lehninger, A.L. *Biochemistry.* 2nd ed. Worth Publishers, N.Y., 1975.

BIOL202 BIOENERGETICS II (CELL PHYSIOLOGY)

28 hrs lectures, 56 hrs practical/tutorial

Structure of microbial, plant and animal cells. Maintenance of the intracellular environment. Diffusion across membranes. Water relations of cells. Distribution of ions across membranes. Active and passive transport. Cell membrane transport systems. Energy processing within cells, the function of organelles, fluxes of metabolites. Mechanical work by cells. Entropy and information in cells.

TEXTBOOK

Nobel, P.S. *Introduction to Biophysical Plant Physiology.* W.H. Freeman, 1974.

BIOL203 BIOENERGETICS III (PHYSIOLOGY)

28 hrs lectures, 56 hrs practical/tutorial

Energy metabolism of multicellular organisms, the effect of body size. Nutrition in animals and plants. Digestion and absorption of food. Respiration and the transport of oxygen. Blood circulation and sap flow. Energetics of locomotion and the physiology of muscle. Poikilothermy and homeothermy. Water and solute metabolism. Environmental adaptation. Energy balance and the physiology of starvation and obesity.

TEXTBOOK

Schmidt-Nielsen, K. *Animal Physiology - Adaptation and Environment.* Cambridge University Press, 1975.

BIOL204 BIOENERGETICS IV (ECOLOGY)

28 hrs lectures, 56 hrs practical/tutorial

Properties of open systems. Mechanisms of energy flow and homeostasis. Unstable ecosystems; succession. Mathematical modelling. Specific types of ecosystems. Man's impact; man and resources.

TEXTBOOK

Odum, T.P. *Fundamentals of Ecology.* 3rd ed. W.B. Saunders Co., Philadelphia, 1971.

BIOL211 INTRODUCTORY BIOCHEMISTRY

2 lectures, 4 hrs practical/tutorials per week
Assessment: Assessment of practical work, two 30-minute written tests, one final 2-hour written examination.

This subject is intended to serve primarily as an introduction to Bioenergetics I and II. It is, nevertheless, a self-contained course in biochemistry and can be taken without an intention to progress further in biology. Major topics covered include the chemistry and biochemistry of proteins, carbohydrates, lipids and nucleic acids; properties of lipoproteins membranes; enzymes and enzyme catalysis; intermediary metabolism; biochemical evolution.

TEXTBOOKS

Conn, E.E. and Stumpf, P.K. *Outlines of Biochemistry.* 4th ed. John Wiley and Sons Inc., New York, 1976.

or

Lehninger, A.L. *Biochemistry.* 2nd ed. Worth Publishers, New York, 1975.
(Lehninger is recommended for students intending to proceed to Bioenergetics I.)

BIOL281 EVOLUTION AND ECOLOGY OF MAN

Three lectures and one tutorial per week.
Assessment: Two written assignments. One final 3-hour written exam.

This is a broadly based subject which is not an alternative to Bioenergetics IV (Ecology). It is intended for mature students but there are no formal pre-requisites other than 48 credit points in any subjects. Enrolment at 200- or 300-level will be determined by the number of credit points already achieved.

The subject will cover the following areas:

Principles of evolution: Darwin and natural selection; mechanisms of inheritance; diversity; population genetics.

Human evolution: The fossil record; neurobiological and behavioural evolution; reproduction in man; cultural evolution and human diversity.

Concepts of ecology: Food webs and energetics of ecosystems; species interactions and stability of natural communities.

Human ecology: (a) effects of environment on man: nutrition, disease, pollution. (b) effects of man on environment: population, resources, pollution and conservation. An ecological perspective of man. (c) global interactions between man and the biosphere.

TEXTBOOKS

A textbook will be specified at the beginning of the course and a reading list will be provided.

300-LEVEL

BIOL301 BIOENERGETICS I (METABOLISM)

Details: As for BIOL201.

BIOL302 BIOENERGETICS II (CELL PHYSIOLOGY)

Details: As for BIOL202.

BIOL303 BIOENERGETICS III (PHYSIOLOGY)

Details: As for BIOL203.

BIOL304 BIOENERGETICS IV (ECOLOGY)

Details: As for BIOL204

BIOL381 EVOLUTION AND ECOLOGY OF MAN

Details: As for BIOL281.

BIOL391 ADVANCED BIOLOGY

12 hrs practical per week plus all departmental seminars.
Assessment: Two seminars, two written assignments, two written project reports, one 3-hour written examination based on a reading list.

A student will be assigned to two academic staff members who will each supervise a project for half the session. The projects will be selected primarily to extend and intensify both practical and theoretical experience. Emphasis will be placed on developing competence in a range of laboratory and field techniques not already familiar to the student. The reading list is intended to enhance previous understanding of biological phenomena and to introduce the student to areas of biology not treated elsewhere in the course.

TEXTBOOKS

A reading list will be provided at the beginning of the course.

MATH334 DESIGN AND ANALYSIS

Refer to "Description of Subjects - Mathematics".

400-LEVEL

BIOL401 BIOLOGY HONOURS

Information may be obtained from the Departmental Chairman.

CHEMISTRY

The Chemistry Department offers two 100-level, four 200-level, four 300-level single session and one 200-level and one 300-level double session subjects. Entry to Chemistry IV Honours course is determined by the Academic Senate on the advice of the Chairman of the Department of Chemistry.

A student wishing to take out a Bachelor of Science degree with a major sequence in Chemistry must obtain at least 36 credit points at the 300-level of which at least 24 credit points must be from subjects offered by the Department of Chemistry.

No reference books are listed for the Chemistry subjects. Students will be provided with a list of recommended reading at the commencement of each course.

SCHEDULE ENTRIES

Refer to Schedules A and E-2 for approved details of the subjects described in this section. Subjects which also appear in other schedules are:

Subject	*Schedules*
CHEM101	C, D & E-1
CHEM102	D & E-1
CHEM211	D
CHEM314	D

100-LEVEL

CHEM101 CHEMISTRY IA (INTRODUCTORY PHYSICAL AND GENERAL CHEMISTRY)

28 hrs lectures, 14 hrs tutorials and 42 hrs practical
Assessment: Practical and tutorial assignments plus written examination

Atomic theory and structure, chemical bonding, shapes of molecules. Particle theory of matter, gases and liquids, thermodynamics and thermochemistry.

TEXTBOOKS

Brescia, F. et al. *Fundamentals of Chemistry.* Academic Press, 1970.
Pierce, C. & Smith, R.N. *General Chemistry Workbook.* 4th ed. Freeman, 1971.

CHEM102 CHEMISTRY IB (INTRODUCTORY ORGANIC AND PHYSICAL CHEMISTRY)

28 hrs lectures, 14 hrs tutorials and 42 hrs practical
Assessment: Practical and tutorial assignments plus written examination

Chemical equilibrium and equilibrium constants. Acids and bases. Kinetics and electrochemistry. Nomenclature, preparation and reactions of carbon compounds. Stereochemistry.

TEXTBOOKS

Brescia, F. et al. *Fundamentals of Chemistry.* Academic Press, 1970.
Pierce, C. & Smith, R.N. *General Chemistry Workbook.* 4th ed. Freeman, 1971.
Fessenden, R.J. & Fessenden, J.S. *The Basis of Organic Chemistry.* Allyn & Bacon, 1971.

200-LEVEL

CHEM211 INORGANIC CHEMISTRY II

28 hrs lectures, 14 hrs tutorials, 42 hrs practical
Assessment: Practical and tutorial assignments plus written examination

Systematic chemistry of some transition elements and non-metals. Introduction to co-ordination chemistry. The co-ordinate bond, stereoisomerism. Elementary magnetochemistry. Molecular orbital theory of bonding. Symmetry.

TEXTBOOKS

Basolo, F. & Johnson, R.C. *Co-ordination Chemistry.* Benjamin, 1964.
Cotton, F.A. & Wilkinson, G. *Advanced Inorganic Chemistry.* 3rd ed. Wiley, 1972.

CHEM212 ORGANIC CHEMISTRY II

28 hrs lectures, 14 hrs tutorials plus 42 hrs practical classes
Assessment: Practical and tutorial assignments plus written examination

Survey of the more important organic reactions classified from the viewpoint of reaction mechanism. Nucleophilic substitution. Nucleophilic addition. Nucleophilic substitution of carbonyl and

CHEM212 ORGANIC CHEMISTRY II (CONT'D)

related compounds. Electrophilic substitution. Oxidation and reduction. Molecular rearrangements. Organic synthesis.

TEXTBOOKS

Hendrickson, J.B., Cram, D.J. & Hammond, G.S. *Organic Chemistry.* 3rd ed. McGraw-Hill, 1970.
Landgrebe, J.A. *Theory and Practice in the Organic Laboratory.* Heath, 1973.

CHEM213 PHYSICAL CHEMISTRY II

28 hrs lectures, 14 hrs tutorials plus 42 hrs practical classes
Assessment: Practical and tutorial assignments plus written examination

Introductory Quantum Chemistry: Applications of quantum theory to the extra-nuclear structure of atoms. Applications to other chemical and physical systems. Molecular energies from both quantum mechanical and classical viewpoints.

Kinetic Theory: The study of rate processes. Collision theory and transition state theory. Applications to chemical systems.

Chemical Thermodynamics: Review of 1st, 2nd and 3rd laws. Application of thermodynamics to chemical systems.

TEXTBOOKS

Adamson, A.W. *A Textbook of Physical Chemistry.* Academic Press, 1973.
Barrow, G.M. *Physical Chemistry.* 3rd ed. McGraw-Hill, 1973.

CHEM214 ANALYTICAL CHEMISTRY II

28 hrs lectures, 14 hrs tutorials plus 42 hrs practical classes
Assessment: Practical and tutorial assignments plus written examination

Ionic equilibrium in analytical chemistry: acid base, oxidation-reduction, precipitation. Introductory analytical spectroscopy, separation techniques: chromatography, solvent extraction etc.

TEXTBOOK

Dick., J.G. *Analytical Chemistry.* McGraw-Hill, 1973.

CHEM219 THE COMPUTER IN SCIENCE

28 hrs lectures, 28 hrs tutorial/practical
Assessment: Continual assessment plus written examination

Applications of the computer: Data handling. Regression Analysis. Numerical Integration. Matrix manipulation. Solution of simultaneous equations.

TEXTBOOK

Dickson, T.R. *The Computer and Chemistry.* Freeman, 1968.

300-LEVEL

CHEM314 ANALYTICAL CHEMISTRY III

42 hrs lectures and tutorials plus 42 hrs practical classes
Assessment: Practical and tutorial assignments plus written examination

Electrochemistry and chemical analysis, electrodeposition, potentiometry, polarography, anodic stripping voltammetry. Techniques of trace analysis, sampling, solution concentration, selection of method.

Instrumentation and trace analysis, mass spectrometry, atomic absorption spectroscopy, fluorescence analysis, emission spectroscopy, radiochemistry.

TEXTBOOKS

Dick, J.G. *Analytical Chemistry.* McGraw-Hill, 1973.
Ewing, G. *Instrumental Methods of Chemical Analysis.* 3rd ed. McGraw-Hill, 1969.
McLafferty, F.W. *Interpretation of Mass Spectra.* 2nd ed. Benjamin.

CHEM311 INORGANIC CHEMISTRY III

42 hrs lectures and tutorials plus 42 hrs practical classes
Assessment: Practical and tutorial assignments plus written examination

Chemistry of the transition elements, systematic study of selected elements. Complexes of π-acceptor ligands. Interaction of metals, ligands and metal complexes in biological systems. Organometallic compounds. Electronic spectra of transition metal compounds. Energy level diagrams. Jahn-Teller effect. Magnetochemistry, the magnetic properties of the free ion. X- and gamma-ray techniques in chemistry.

TEXTBOOK

Cotton, F.A. & Wilkinson, G. *Advanced Inorganic Chemistry.* 3rd ed. Wiley, 1972.

CHEM312 ORGANIC CHEMISTRY III

84 hrs lectures and tutorials plus 84 hrs practical classes
Assessment: Practical and tutorial assignments plus written examination

Stereochemistry of organic compounds. Resolution, relationship between stereochemistry and reactivity, o.r.d., asymmetric syntheses. Reactions and stereochemistry of pentoses, hexoses, disaccharides, cellulose, starch and ascorbic acid.
Synthesis and reactivity of α-amino acids, peptides and proteins. End-group analysis and sequencing. Biosynthetic pathways through acetate, shikimate and mevalonate. Chemistry and biogenesis of acetogenins, terpenoids, steroids and alkaloids.
Ultraviolet, infrared and nuclear magnetic resonance spectroscopy in organic chemistry. Comparative heterocyclic chemistry of 5- and 6-membered π-excessive and π-deficient systems, their benzologues and azalogues. Heteroethylenics.

TEXTBOOKS

Eliel, E.L. *Stereochemistry of Carbon Compounds.* McGraw-Hill, 1962.
Landgrebe, J.A. *Theory and Practice in the Organic Laboratory.* Heath, 1973.
Law, H.O. *The Organic Chemistry of Peptides.* Wiley, 1970.
Paquette, L.A. *Principles of Modern Heterocyclic Chemistry.* Benjamin, 1968.
Tedder, J.M., Nechvatal, A., Murray, A.W., Carnduff, J. *Basic Organic Chemistry.* Part 4. Wiley, 1972.

and either
Williams, D.H., Fleming, I. *Spectroscopic Methods in Organic Chemistry.* 2nd ed. McGraw-Hill, 1973.

or
Dyke, S.F., Floyd, A.J., Sainsbury, M., Theobald, R.S. *Organic Spectroscopy.* Penguin Books, 1971.

CHEM323 PHYSICAL CHEMISTRY III

42 hrs lectures and tutorials plus 42 hrs practical classes
Assessment: Practical and tutorial assignments plus written examination

Chemical Dynamics; Correlation of Chemical Reactivity with Molecular Structure; Surface Chemistry and Applications; Transport Processes in Solution; Electrochemistry.

TEXTBOOKS

Avery, H.E. *Basic Reaction Kinetics and Mechanisms.* Macmillan, 1974.
Aveyard & Haydon. *An Introduction to the Principles of Surface Chemistry.* Cambridge University Texts, 1973.
Crow, D.R. *Principles and Applications of Electrochemistry.* Chapman & Hall, 1974.

CHEM324 THEORETICAL CHEMISTRY

56 hrs lectures and tutorials plus 28 hrs practical classes
Assessment: Practical and tutorial assignments plus written examination

The Concepts of Quantum Chemistry; Molecular Orbital Theory of Electronic Structure; Symmetry in Quantum Chemistry and Molecular Spectroscopy; Statistical Mechanics.

TEXTBOOK

Atkins, P.W.. *Molecular Quantum Mechanics: An Introduction to Quantum Chemistry.* Oxford University Press, 1970.

400-LEVEL

CHEM411 SELECTED TOPICS IN CHEMISTRY

56 hrs lectures and 56 hrs tutorials
Assessment: Written examination and seminar

Theories concerning the creation of life on Earth; Organic and Inorganic Geochemistry and its effect on the environment; Vitamins, hormones and important common drugs; Introduction to Digital Instrumentation; The Basic Nature and desirable properties of Materials (e.g. ceramics, glasses, polymeric and composite materials); Chemistry Through the Ages; Chemical Literature; Chemistry and Society; Computer Simulation of Complex Systems; and others added as required.

TEXTBOOKS

A reading list will be provided by the Department at the beginning of each year.

CHEM420 CHEMISTRY HONOURS PROJECT

A list of topics available for study in any year will be provided by the Department of Chemistry.

TEXTBOOKS

A reading list will be provided by the supervisor allocated to each student.

CIVIL ENGINEERING

Normal Structure and Study Patterns

In the operation of the course, subjects are scheduled so that it may be completed within a period of 4 to 8 years. Common patterns are the 4 years pattern (I) and the 6 years pattern (II) but progression within the course is by subject with the restriction of meeting pre-requisite and co-requisite requirements.

Patterns (I) and (II) are shown below.

Industrial Electives

Students in approved full-time employment may become eligible to include the subjects of Civil Engineering Practice in their programme in place of the electives. The inclusion of such work will enable students to complete the course under pattern (I).

Professional Experience

As part of the course requirements, students are required to obtain 12 weeks of approved professional experience; such experience to be obtained in the summer vacation prior to their final year, unless exempted by the Department due to the student's full-time professional employment.

Excursions form an integral part of the course and are mandatory.

Transitional Arrangements

Students enrolled in the B.E. in Civil Engineering prior to January 1976 will be required to complete the course as prescribed in Schedule C - B.E. in Civil Engineering - of the Bachelor Degree Requirements approved as at 1st January, 1975.

The Chairman of the Department of Civil Engineering has the authority to approve any variations to this prescribed programme for the B.E. in Civil Engineering in the event of students enrolled under the 1975 requirements seeking to change over to the 1976 course.

Assessment

All subjects offered for the degree of Bachelor of Engineering in the Department of Civil Engineering normally are assessed by means of a final examination. Set project work, laboratory reports and tutorial assignments may be taken into account in this assessment.

SCHEDULE ENTRIES

Refer to Schedule C for approved details of the subjects described in this section. The other relevant schedule entries are as follows:

Subject	*Schedule*
CIVL111	D
CIVL112	A
CIVL113	A
CIVL114	A
CIVL115	A
CIVL116	A
CIVL122	D
CIVL216	D
CIVL219	D
CIVL481	D
CIVL482	D

BACHELOR OF ENGINEERING - CIVIL ENGINEERING

PATTERN I: 4 YEAR ATTENDANCE

YEAR 1 OF ATTENDANCE

Session 1		*Hours per Week*	*Session 2*		*Hours per Week*
CIVL111	Introduction to Design C	3	CIVL191	Building Construction	3
CHEM101	Chemistry IA	6	CIVL123	Dynamics for Civil Eng.	3
PHYS142	Fundamentals of Physics B	3	MATH101	Maths IA	6
CIVL171	Eng. Surveying I	3	CIVL142	Materials IC	6
MATH101	Maths IA	6	CIVL193	Excursions I	-
CIVL122	Mechanics and Structures	3	CIVL172	Eng. Survey Camp*	-
			CIVL192	Civil Engineering Construction I	3

*Alternative times for survey camp.

YEAR 2 OF ATTENDANCE

Session 1		*Hours per Week*	*Session 2*		*Hours per Week*
ELEC291	Applied Elect. I**	3	ELEC291	Applied Elect. I	3
CIVL294	Civil Eng. Constr. 2	3	CIVL282	Computational Tech. in Civil Eng. 2	5
CIVL281	Computational Tech. in Civil Eng. 1	5	CIVL226	Eng. Mechanics 2	3
CIVL225	Eng. Mechanics 1	3	CIVL231	Hydraulics 1	3
CIVL295	Experimental Eng. IC	3	CIVL243	Materials 2C	3
CIVL251	Strength of Materials 1	3	CIVL252	Strength of Materials 2	3
CIVL273	Eng. Surveying 2	3	CIVL213	Structural Design 1	4
CIVL296	Excursions 2	-	CIVL172	Eng. Survey Camp*	-
			ECON111	Economics II**	4

YEAR 3 OF ATTENDANCE

CIVL326	Eng. Mechanics 3	3	CIVL327	Eng. Mechanics 4	3
CIVL344	Materials 3C	3	CIVL374	Eng. Surveying 3	3
CIVL362	Soil Mechanics 1	3	CIVL334	Hydraulics 3	3
CIVL312	Civil Eng. Design	3	CIVL332	Hydraulics 2	3
CIVL353	Structures 1C	3	CIVL363	Soil Mechanics 2	3
CIVL398	Excursions 3	-	CIVL314	Structural Design 2	3
	300-Level Electives	8	CIVL354	Structures 2C	3
			CIVL172	Eng. Survey Camp*	-
			CIVL399	Industrial Experience	-
				300-Level Electives	3

YEAR 4 OF ATTENDANCE

CIVL401	Civil Eng. Thesis	6	CIVL401	Civil Eng. Thesis	10
CIVL481	Eng. Management 1	2	CIVL482	Eng. Management 2	2
CIVL490	Excursions 4	-		400-Level Electives	9
	400-Level Electives	12			

300-Level Electives
(May also be taken as 400-level)

		Hours per Week
CIVL497	Introductory Modern Languages (if available - e.g. French, Italian)	3
CIVL494	Coastal Engineering	3
CIVL495	Geology for Civil Engineers	3
CIVL496	Roads Engineering	4
CIVL397	Civil Eng. Construction 3	3
MECH241	Thermodynamics I	3
ECON215	Microeconomics	3
MECH391	Heat Transfer for Civil Engineers	3

400-Level

CIVL410	Civil Eng. Practice 1	
CIVL411	Civil Eng. Practice 2	
CIVL412	Civil Eng. Practice 3	
CIVL413	Civil Eng. Practice 4	
CIVL415	Civil Eng. Practice 5	
CIVL416	Civil Eng. Practice 6	
CIVL445	Civil Eng. Materials 1	3
CIVL446	Civil Eng. Materials 2	3
CIVL491	Computer Applications in Civil Eng. 1	3
CIVL492	Computer Applications in Civil Eng. 2	3
CIVL475	Eng. Surveying 4	3
CIVL463	Foundation Engineering	3
CIVL434	Hydraulic Engineering	3
CIVL493	Public Health Engineering	4

*Alternative times for survey camp.
**Alternative subject.

400-Level (Cont'd)

		Hours per Week
CIVL464	Soil Mechanics 3	3
CIVL455	Structures 3	3
CIVL456	Structures 4	3
CIVL417	Structural Design 3	3
CIVL486	The Civil Engineer and the Environment	3
CIVL487	Town Planning	4
CIVL488	Traffic Engineering and Transportation	3
ECON312	Industrial Economics	

PATTERN II: 6 YEAR ATTENDANCE

YEAR 1 OF ATTENDANCE

Session 1		*Hours per Week*	*Session 2*		*Hours per Week*
CIVL122	Mechanics and Structures	3	CIVL111	Introduction to Design C	3
CIVL191	Building Construction	3	CIVL123	Dynamics for Civil Eng.	3
MATH101	Maths 1A	6	MATH101	Maths 1A	6

YEAR 2 OF ATTENDANCE

PHYS142	Fundamentals of Physics B	3	CIVL142	Materials 1C	6
CIVL171	Eng. Surveying 1	3	PHYS142	Fundamentals of Physics B	6
CHEM101	Chemistry 1A	6	CIVL193	Excursions 1	-
			CIVL172	Eng. Survey Camp*	-
			CIVL192	Eng. Construction 1	3

YEAR 3 OF ATTENDANCE

CIVL281	Comp. Tech. in Civ. Eng. 1	5	CIVL282	Comp. Tech. in Civ. Eng. 2	5
CIVL251	Strength of Materials 1	3	CIVL213	Structural Design 1	4
CIVL225	Eng. Mechanics 1	3	CIVL226	Eng. Mechanics 2	3
CIVL296	Excursions 2	-			

YEAR 4 OF ATTENDANCE

ELEC291	Applied Elect. 1	3	ELEC291	Applied Elect. 1	3
CIVL295	Experimental Eng. 1C	3	CIVL231	Hydraulics 1	3
CIVL273	Eng. Surveying 2	3	CIVL243	Materials 2C	3
CIVL294	Civil Eng. Construction 2	3	CIVL252	Strength of Materials 2	3
			CIVL172	Eng. Survey Camp*	-

YEAR 5 OF ATTENDANCE

CIVL332	Hydraulics 2	3	CIVL334	Hydraulics 3	3
CIVL362	Soil Mechanics 1	3	CIVL344	Materials 3C	3
CIVL353	Structures 1C	3	CIVL374	Eng. Surveying 3	3
MECH241	Thermodynamics 1	3	CIVL399	Industrial Experience	-
CIVL398	Excursions 3	-		300-Level Elective	3

YEAR 6 OF ATTENDANCE**

CIVL326	Eng. Mechanics 3	3	CIVL482	Eng. Management 2	2
CIVL312	Civil Eng. Design	3	CIVL401	Civil Eng. Thesis	6
CIVL481	Eng. Management 1	2		300- or 400-Level Electives[ø]	21
CIVL401	Civil Eng. Thesis	6			
CIVL490	Excursions 4	-			
	300- or 400-Level Electives[ø]	15			

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* Alternative times for survey camp

**May be taken over 1 or 2 years; vacation at end of year 5 may be used for Thesis commencement.

ø Including practice electives.

300-Level Electives

		Hours per Week
CIVL327	Engineering Mechanics 4	3
CIVL397	Civil Eng. Construction 3	2
CIVL363	Soil Mechanics 2	3
CIVL314	Structural Design 2	3
CIVL354	Structures 2C	3
MECH391	Heat Transfer for Civil Eng.	3
CIVL497	Introductory Modern Lang.	3
CIVL494	Coastal Engineering	3
CIVL495	Geology for Civil Eng.	3
CIVL496	Roads Engineering	4

400-Level Electives

CIVL410	Civil Eng. Practice 1	
CIVL411	Civil Eng. Practice 2	
CIVL412	Civil Eng. Practice 3	
CIVL413	Civil Eng. Practice 4	
CIVL415	Civil Eng. Practice 5	
CIVL416	Civil Eng. Practice 6	
CIVL417	Structural Design 3	3
CIVL434	Hydraulic Eng.	3
CIVL445	Civil Eng. Materials 1	3
CIVL446	Civil Eng. Materials 2	3
CIVL455	Structures 3	3
CIVL456	Structures 4	3
CIVL463	Foundation Eng.	3
CIVL464	Soil Mechanics 3	3
CIVL475	Eng. Surveying 4	3
CIVL491	Computer Application in Civ. Eng. 1	3
CIVL492	Computer Application in Civ. Eng. 2	3
CIVL493	Public Health Eng.	4
CIVL486	The Civil Eng. and the Environment	3
CIVL487	Town Planning	4
CIVL488	Traffic Engineering and Transportation	3

100-LEVEL

CIVL111 INTRODUCTION TO DESIGN C

(a) *Drawing Practice* with examples taken from trusses, space frames, urban systems, transportation.
(b) *Design* of bolted and welded attachments. Introduction to structural design, design loads, factor of safety, codes of practice.
(c) *Materials in design* including classification of civil engineering materials, occurrence, processing, manufacture and their properties.
(d) *Workshop Practice* including elementary workshop exercises and practice in the use of simple machine tools and welding.

RECOMMENDED READING

AS CZ1. Aust. Standard Engineering Drawing Practice. I.E. Aust. 72.

CIVL112 BUILDING*

The design and construction of buildings and their environment, landscaping, estimating and building organization.

RECOMMENDED READING

Australia C.E.B.S. *Notes on the Science of Building.*
Drysdale, J.W. *Designing Houses for Australian Climate.* C.E.B.S., Sydney, Bull. No. 6.
Fleming, I. and Others. *The Penguin Dictionary of Architecture.* Penguin.
Mitchell, C.F. *Elementary Building Construction.*
McKay, W.B. *Building Construction.* Vol. 1 & 2. Longman.
Sharp, W. *Australian Methods of Building Construction.* Angus & Robertson, Sydney, 1969.

*Subjects included in Schedule A.

CIVL113 PUBLIC WORKS AND CONSTRUCTION*

Principles of construction and fabrication of public works including consideration of operating costs, comparative performance of large scale equipment, purchase and operation of plant, job administration and construction labour. The public work to include irrigation and water supply schemes, harbour and river works, pipelines.

RECOMMENDED READING

Antill, J.M. & Ryan, P.W.S. *Civil Engineering Construction.* Angus and Robertson.
Deatherage, G.E. *Construction Company Organisation and Management.* McGraw-Hill.
Hardenbergh, W.A. & Rodie, E.R. *Water Supply and Waste Disposal.* Int. Textbooks.
USCE-CERC. *Shore Protection Planning and Design.*

CIVL114 SURVEYING*

Construction, adjustment and use of surveying instruments; methods of plane traverse and plane table surveying; levelling and contouring; adjustment of surveying errors.

RECOMMENDED READING

Schofield, W. *Engineering Surveying.* Butterworths.

CIVL115 PHOTO-INTERPRETATION AND MEASUREMENT*

Introduction to Photogrammetric techniques and their application in land utilization, planning and development.

RECOMMENDED READING

Kilford, W.K. *Elementary Air Survey.* Pitman Paperbacks.
Wolf, P.R. *Elements of Photogrammetry.* McGraw-Hill.
American Society of Photogrammetry. *Manual of Photographic Interpretation.*

CIVL116 THE BUILT ENVIRONMENT*

The interchange between man and his artificial environment including the management of natural resources, air movement, shelter and noise. Maintenance of towns, buildings and roads.

RECOMMENDED READING

Frazer Reekie, R. *Design in the Built Environment.*
Stewart, M. (ed.) *The City Problems of Planning.* Penguin.
Tetlow, J. & Gogs, A. *Homes, Towns and Traffic.*

CIVL122 MECHANICS AND STRUCTURES

Forces and equilibrium; axial forces in trusses; shear forces and bending moments in beams; stresses and strains at a point; bending and shear stresses; introduction to the deflection of beams.

RECOMMENDED READING

Atkins, K., Darvall, P. & McMahon, T. *Mechanics & Structures.* Science Press.
Cassie, W.F. *Statics, Structures and Stress.* Longman.
Higginson, G.R. *Foundations of Engineering Mechanics.* Longman.

CIVL123 DYNAMICS FOR CIVIL ENGINEERS

Graphical and analytical analysis of velocity and acceleration. Relative motion. Energy conservation. Kinematics. Particle dynamics. Introduction to vibrations, noise. Isolation.

RECOMMENDED READING

Crede, C.E. *Vibrations and Shock Isolation.*
Hansen, H.M. & Chenea, P.F. *Mechanics of Vibration.*
Parkin, P.H. and Humphreys, H.R. *Accoustics, Noise and Building.*

*Subjects included in Schedule A.

CIVL142 MATERIALS 1C

Introduction to the study of the mechanical properties of metals and non-metals; introduction to non-metallic engineering materials including wood, concrete, ceramics. Energy concepts.

RECOMMENDED READING

Davis, H.E., Troxell, G.E. & Wiskocil, C.T. *The Testing and Inspection of Engineering Materials.* McGraw-Hill.
Di Benedetto, A.T. *The Structure and Properties of Materials.* McGraw-Hill.
Hayden, H.W., Moffatt, W.G. & Wulff, J. *The Structure and Properties of Materials.* Vol. III. Wiley.
Jastrzebski, D. *Nature and Properties of Engineering Materials.* (W.I.E.).
Polakowski, W.H. and Ripling, E.J. *Strength and Structure of Engineering Materials.* Prentice-Hall.
Richards, C.W. *Engineering Materials Science.* Chapman and Hall.

CIVL171 ENGINEERING SURVEYING 1

Linear measurements, corrections, chain surveying, simple levelling. Earthworks. Theodolite and compass traversing; simple curves, transition curves, vertical curves, setting out.

RECOMMENDED READING

Bannister, A. & Raymond, S. *Surveying.* Pitman.
Bouchard, H. & Moffitt, F.H. *Surveying.* 5th ed. International.
Clark, D. *Plane and Geodetic Surveying.* Vol. 1. 6th ed. Constable.

CIVL172 ENGINEERING SURVEY CAMP

An area of land will be surveyed. Experience will be gained in carrying out linear measurements, chain surveys; level circuits; traverse surveys and computations; tacheometrical surveys; setting out of horizontal curves; plane tabling.

RECOMMENDED READING

Bannister, A. & Raymond, S. *Surveying.* Pitman.
Bouchard, H. & Moffitt, F.H. *Surveying.* 5th ed. International.
Clark, D. *Plane and Geodetic Surveying.* Vol. 1. 6th ed. Constable.

CIVL191 BUILDING CONSTRUCTION

Single and ridged roofs; solid and framed walls; footings; stone, brick, tiles, sheets, timber; roof coverings; ventilation ducting; heating and cooling appliances; basements; procedures; quality and management control; Economics.

RECOMMENDED READING

A reading list will be available 1 week before lectures commence.

CIVL192 CIVIL ENGINEERING CONSTRUCTION 1

The classification, selection and use of plant, its organization and costs; site establishment, drilling, blasting, quarrying, tunnelling, pipe lines, pile driving, hoisting and conveying. Project planning, construction and analysing networks. Estimating. Preservation of structures.

RECOMMENDED READING

Antill, J.M. & Ryan, P.W.S. *Civil Engineering Construction.* Angus & Robertson.
Antill, J.M. & Woodhead, R.W. *Critical Path Methods in Construction Practice.* Wiley.
Antill, J.M. *Civil Engineering Management.* Angus & Robertson.
Thomas, L.J. *An Introduction to Mining.*

CIVL193 EXCURSIONS 1

Visits to selected works and establishments.

CHEM101 CHEMISTRY IA

Refer to "Description of Subjects - Chemistry".

MATH101 MATHEMATICS 1A

Refer to "Description of Subjects - Mathematics".

PHYS142 FUNDAMENTALS OF PHYSICS B

Refer to the list of Physics subjects in Schedule A and to "Description of Subjects - Physics".

ECON111 ECONOMICS II

Refer to "Description of Subjects - Economics".

200-LEVEL

CIVL213 STRUCTURAL DESIGN 1

(a) Steel structures, bolted and welded connections; simple and built up beams; trusses and columns.
(b) Introduction to design with timber and bricks.

RECOMMENDED READING

A.I.S.C. Steel Design Course. Part I and II.
Gorenc, B.E. & Tinyou, R. *Steel Designers Handbook.* 2nd ed. N.S.W.U.P.
Lay, M.G. *Source Book for the Australian Steel Structures Code.*
S.A.A. AS. 1250. *Steel Structures Code.*
S.A.A. CA. 65. *Timber Engineering Handbook.*

CIVL216 DESIGN M

Moving loads; influence lines for beams; design loads and stresses, design of welded plate web girder; project.

RECOMMENDED READING

A.I.S.C. Steel Design Course. Part I & II.
Gorenc, B.E. & Tinyou, R. *Steel Designers Hand Book.* 2nd ed. N.S.W.U.P.

CIVL219 EXPERIMENTAL STRESS ANALYSIS

Strain gauges photo-elastic methods; analogies. Calculation associated with experimental methods. Ultrasonic vibrations.

RECOMMENDED READING

Charlton, W. *Model Analysis of Structures.*
Frocht, M.M. *Photo Elasticity.* Vol. II.
Hetenyi, M. *Handbook of Experimental Stress Analysis.*
Hinsley, J.F. *Non Destructive Testing.*
Holma, T.Y. *Experimental Methods for Engineers.*

CIVL225 ENGINEERING MECHANICS 1

Lagrangian equations of motion; vibrations and analogies; introduction to continuum mechanics.

RECOMMENDED READING

A reading list will be available 1 week before lectures commence.

CIVL226 ENGINEERING MECHANICS 2

Introduction to systems analysis; modelling and simulation; introduction to decision theory; optimization techniques; dynamic programming.

RECOMMENDED READING

Keller. *Mathematics of Modern Engineering.* Vol. II. I.C.E.S. Manuals.
Whitehouse, G.E. *System Analysis and Design Using Network Techniques.*
Zikhovitiskiy & Aodeyeva. *Linear and Convex Programming.*

CIVL231 HYDRAULICS 1

Properties of fluids. Hydrostatics, stability of floating bodies. Continuity equation. Impulse - momentum principle, application to channels. Equations of motion; Euler and Bernoulli equations. Hydrodynamics, streamlines, flowfields, flow patterns for overflow structures. Flow measurement. Flow over weirs and spillways. Dimensional analysis.

RECOMMENDED READING

Streeter, V.L. *Fluid Mechanics.* McGraw-Hill.
Vennard, J.K. & Street, R.L. *Elementary Fluid Mechanics.* Wiley.

CIVL243 MATERIALS 2C

Failure and fracture theories; fatigue; impact strength - approximate methods; stress concentration; notch sensitivity; welding processes and residual stresses.

RECOMMENDED READING

Axelrad, D.R. *Strength of Materials for Engineers.* Pitman.
Davis, H.E., Troxell, G.E. and Wiskocil, G.T. *Testing and Inspection of Engineering Materials.* McGraw-Hill.
Forrest, P.G. *Fatigue of Metals.* Pergamon.
Heywood, R.B. *Designing Against Fatigue.*
Lipson, C. & Juvinall, R.C. *Handbook of Stress and Strengh.* Macmillan.
Mann, J.Y. *Fatigue of Materials.* M.U.P.
Marin, J. *Mechanical Behaviour of Engineering Materials.* Prentice-Hall.
Peterson, R. *Stress Concentration Design Factors.* Wiley.
Polakowski, N.H. & Ripling, E.J. *Strength and Structure of Engineering Materials.* Prentice-Hall.
Richards, C.W. *Engineering Materials Science.* Chapman & Hall.

CIVL251 STRENGTH OF MATERIALS 1

Deflection of beams; flexibility and stiffness concepts; statically indeterminate beams, torsion of circular and thin wall sections. Combined loading; strain energy; buckling of compression members; elastic and non-elastic behaviour.

RECOMMENDED READING

Cernica, J.N. *Strength of Materials.*
Shanley, F.R. *Mechanics of Materials.*
Timoshenko, S.P. & Gere, J.M. *Strength of Materials.* Van Nostrand Reinhold.

CIVL252 STRENGTH OF MATERIALS 2

Experimental methods including dynamic loadings; strain gauge techniques; photo-elasticity; testing machines and procedures; methods of non-elastic analysis; applications.

RECOMMENDED READING

Charlton, T.M. *Model Analysis of Structures.*
Heywood, R.B. *Designing by Photo Elasticity.*
Holman. *Experimental Methods for Engineers.*
Zienkiewicz, O.C. & Hollister, G.S. *Stress Analysis.*

CIVL254 STRENGTH OF MATERIALS

Components of stress and strain; two dimensional stress systems; torsion of circular shafts; springs; flexure and deflexion of beams; structures; slope deflexion equation; strain energy; frame structures.

RECOMMENDED READING

Cernica, J.N. *Strength of Materials.*
Shanley, F.R. *Mechanics of Materials.*
Timoshenko, S.P. & Gere, J.M. *Strength of Materials.* Van Nostrand Reinhold.

CIVL273 ENGINEERING SURVEYING 2

Optical distance measurement; electronic distance measurement; precise levelling; precise levelling equipment; triangulation surveys; theory of errors; Geodetic surveying; Geodetic computations.

CIVL273 ENGINEERING SURVEYING 2 (CONT'D)

RECOMMENDED READING

Clark, D. *Plane and Geodetic Surveying.* Vol. II.
Schofield, W. *Engineering Surveying.* Vol. II.

CIVL281 COMPUTATIONAL TECHNIQUES IN CIVIL ENGINEERING 1

Taylor Series and its applications; Fourier methods of analysis; complex variable and contour integration; matrix analysis and its use in Civil Engineering. Computer usage.

RECOMMENDED READING

A reading list will be available 1 week before lectures commence.

CIVL282 COMPUTATIONAL TECHNIQUES IN CIVIL ENGINEERING 2

Introduction to statistical methods, quality control; finite differences; concepts of finite elements in relation to two and three dimensions. Computer applications using finite elements.

RECOMMENDED READING

A reading list will be available 1 week before lectures commence.

CIVL294 CIVIL ENGINEERING CONSTRUCTION 2

(a) Contracts, specifications, Bill of quantities, economic evaluation, Management, Personnel management;
(b) Introduction to transportation engineering; roads and pavements; airport engineering; railroad engineering; river and coastal engineering; pipeline transportation; belt conveyors; undersea transportation; transportation planning.

RECOMMENDED READING

Hennes & Eske. *Fundamentals of Transportation Engineering.* McGraw.

CIVL295 EXPERIMENTAL ENGINEERING 1C

Design of models; instrumentation for the measurement of load, strain, displacement and deflection; data acquisition and analysis; applications to the manufacture and testing of speciments of civil engineering materials.

RECOMMENDED READING

A reading list will be available 1 week before lectures commence.

CIVL296 EXCURSIONS 2

Visits to selected works and establishments.

ELEC291 APPLIED ELECTRICITY 1

Refer to "Description of Subjects - Electrical Engineering" -- Servicing subjects.

MECH241 THERMODYNAMICS 1

Refer to "Description of Subjects - Mechanical Engineering".

ECON213 MICROECONOMICS

Refer to "Description of Subjects - Economics".

300-LEVEL

CIVL312 CIVIL ENGINEERING DESIGN

(a) Topics to be selected from: location and design of earth and rock-fill dams, pipelines. Treatment works.
(b) Design of reinforced concrete elements.

RECOMMENDED READING

C. & C.A. *Australian Reinforced Concrete Design Handbook.*
Justin, Creager & Hinds. *Design of Dams.* 3 Vols.
S.A.A. A.S. 1480 Concrete Structures Code.

CIVL314 STRUCTURAL DESIGN 2

(a) Steel Structures - design of continuous structures; rigid mill building frames; plastic design.
(b) Concrete Structures - design of retaining walls, pre-stressed beams and slabs.
(c) Use of Computers.

RECOMMENDED READING

Baker, J.F. & Heyman, J. *Plastic Design of Frames.* Vol. 1.
C. & C.A. *Australian Reinforced Concrete Design Handbook.*
Gorenc, B.E. & Tinyou, R. *Steel Designer's Handbook.* 2nd ed. N.S.W.U.P.
S.A.A. A.S. 1250. Steel Structures Code.
S.A.A. A.S. 1480. Concrete Structures Code.
S.A.A. A.S. 1481. Prestressed Concrete Code.

CIVL326 ENGINEERING MECHANICS 3

Theory of reinforced concrete; elements of pre-stressing; anchor blocks; limit methods; introduction to creep; initial and residual stresses; thermal strain; computer applications.

RECOMMENDED READING

C. & C.A. *Australian Reinforced Concrete Design Handbook.*
Cowan, H. & Smith, P.R. *The Design of Reinforced Concrete.* A. & R.
Dunham, C.W. *The Theory and Practice of Reinforced Concrete.* McGraw-Hill.
Ferguson, P.M. *Reinforced Concrete Fundamentals.* Wiley.
Hughes, B.P. *Limit State Theory for Reinforced Concrete.* Pitman.
Lin, T.Y. *Design of Prestressed Concrete Structures.* Wiley.
S.A.A. A.S. 1480. Concrete Structures Code.
S.A.A. A.S. 1481. Prestressed Concrete Code.

CIVL327 ENGINEERING MECHANICS 4

Numerical and statistical methods including -
(a) Finite element methods; variational formulation for field problems with special cases.
(b) Probability theory, discrete and continuous data, probability density functions, statistical parameters, correlation and regression analysis, sampling theory, statistical inference, data generation using mathematical models, analysis of variance, goodness of fit tests.

RECOMMENDED READING

Guttman, I. & Wilks, S. *Introductory Engineering Statistics.*
Hoel, P.G. *Introduction to Mathematical Statistics.*
Salvadori & Baron. *Numerical Methods in Engineering.*
Zienkiewicz. *The Finite Element Method in Engineering Science.*

CIVL332 HYDRAULICS 2

Similitude and modelling. Flow about immersed objects. Surface resistance in flow past plane boundaries and in ducts and channels. Flow of real fluids in pipes. Pipe networks. Unsteady pipe flow, waterhammer, surge tanks. Steady flow in uniform channels. Turbo-machinery, performance characteristics.

RECOMMENDED READING

Chow, V.T. *Open Channel Hydraulics.*
Streeter, V.L. *Fluid Mechanics.*
Vennard, J.K. & Street, R.L. *Elementary Fluid Mechanics.* Wiley.

CIVL334 HYDRAULICS 3

The earth's water supply and its utilisation. Water resources and climate, precipitation processes, time and space variations of rainfall, rainfall losses, groundwater, hydrograph analysis, hydrograph synthesis, design flood estimation and recurrence interval, flood routing in rivers and reservoirs, urban drainage design, open channel hydraulics.

RECOMMENDED READING

Chow, V.T. *Handbook of Applied Hydrology.* McGraw-Hill.
Henderson, F.M. *Open Channel Flow.* MacMillan.
Linsley, R.K. et al. *Hydrology for Engineers.* McGraw-Hill.
Ward, R.C. *Principles of Hydrology.* McGraw-Hill.

CIVL344 MATERIALS 3C

Non-destructive testing; properties of concrete - plastic and hardened; structure and composition; cement; mix design; additives; concrete manufacture, field control and acceptance. Introduction to highway materials.

RECOMMENDED READING

A.S.T.M. Standards, Part 10. Concrete and Mineral Aggregates. Amer. Soc. for Testing Materials, Philadelphia.
H.M.S.O. *Bituminous Materials in Road Construction.*
Holliday. ed. *Composite Materials.* Elsevier.
Neville, A.M. *Properties of Concrete.* Pitman.
Orchard, D.F. *Concrete Technology.* Vols. I & II. CRL.
Stewart. *High Quality Concrete.* Spon.
Taylor, W.H. *Concrete Technology and Practice.* 3rd ed. A. & R.
Troxell, G.E., Davis, H.E. & Kelly, J.W. *Composition and Properties of Concrete.* McGraw-Hill.
U.S. Bureau of Reclamation. *Concrete Manual.*

CIVL351 STRUCTURES 1

Analysis of statically indeterminate structures; shells; plastic analysis of steel structures; introduction to two-dimensional elasticity: approximate methods.

RECOMMENDED READING

Baker, J.F. & Heyman, J. *Plastic Design of Frames.* Vol. I.
Cassie, W.F. *Structural Analysis.* Longman.
Michalos, J. & Wilson, E.W. *Structural Mechanics and Analysis.* MacMillan.

CIVL353 STRUCTURES 1C

Analysis of indeterminate structures, including space trusses, cables and arches; influence lines; energy methods. Slope deflection equations; moment distribution; flexibility and stiffness methods.

RECOMMENDED READING

Carpenter, S.T. *Structural Mechanics.* Wiley.
Cassie, W.F. *Structural Analysis.* Longman.
Gerstle, K.H. *Basic Structural Analysis.* Prentice-Hall.
Laursen, H.I. *Structural Analysis.* McGraw-Hill.
Michalos, J. & Wilson, E.N. *Structural Mechanics and Analysis.* MacMillan.
Timoshenko, S.P. & Young, D.H. *Theory of Structures.* 2nd ed. McGraw-Hill.
Wang, C.K. *Statically Indeterminate Structures.* McGraw-Hill.
White, R.N., Gergely, P. & Sexsmith, R.G. *Structural Engineering.* Vols. 1 & 2, Combined ed., Wiley.

CIVL354 STRUCTURES 2C

Advanced beam theory: composite and curved beams; beam-columns; beams on elastic foundations. Limit analysis. Experimental structural analysis: direct and indirect techniques. Introduction to computer packages for structural analysis.

RECOMMENDED READING

Charlton, T.M. *Model Analysis of Plane Structures.* Pergamon.
Den Hartog, J.P. *Advanced Strength of Materials.* McGraw-Hill.
Ford, H. *Advanced Mechanics of Materials.* Longman.
Heyman, J. *Beams and Framed Structures.*
Norris, C.H. & Wilbur, J.B. *Elementary Structural Analysis.* McGraw-Hill.

CIVL354 STRUCTURES 2C (CONT'D)

Seely, F.B. & Smith, J.O. *Advanced Mechanics of Materials.* Wiley.
Timoshenko, S.P. *Strength of Materials.* Vol. II. 3rd ed. Van Nostrand.

CIVL362 SOIL MECHANICS 1

Principal types of soil; mechanical analysis and index properties of soils; permeability; settlement computation; stress strain behaviour of sands and clay; shearing resistance and conditions of failure for soils; desiccation of soil; flow nets and computation of quantity of seepage; mechanics of piping; introduction to theory of one dimensional consolidation; stability of slopes.

RECOMMENDED READING

Lambe, T.W. & Whitman, R.V. *Soil Mechanics.* Wiley.
Lambe, T.W. *Soil Testing for Engineers.* Wiley.
Terzaghi, K. & Peck, R.B. *Soil Mechanics in Engineering Practice.* Wiley.

CIVL363 SOIL MECHANICS 2

Experimental determination of soil index properties; measurement of soil strength; theories of earth pressure; bearing capacity of shallow footings, piers and piles; earth pressure against bracing in cuts; stresses beneath loaded areas. Design of footings, rafts and pile foundations. Sheet piles and analysis for stability. Soil stabilisation. Soil exploration.

RECOMMENDED READING

Bishop, A.W. & Henkel, D.J. *Measurement of Soil Properties in the Tri-axial Test.* Arnold.
Lambe, T.W. *Soil Testing for Engineers.* Wiley.
Terzaghi, K. *Theoretical Soil Mechanics.* Wiley.
Terzaghi, K. & Peck, R.B. *Soil Mechanics in Engineering Practice.* Wiley.
Tschebotarioff, G.P. *Soil Mechanics, Foundations and Earth Structures.* McGraw-Hill.
Wu, T.H. *Soil Mechanics.* Allyn & Bacon.

CIVL374 ENGINEERING SURVEYING 3

Photogrammetry: Radial line plotting; stereoscopy; applications to Cadastre; land utilization; route location; town planning and estate development.

RECOMMENDED READING

Kilford, W.K. *Elementary Air Survey.* Pitman Paperbacks.
Manual of Photogrammetry. 3rd ed. Am. Soc. Photogrammetry.
Moffit, F.H. *Photogrammetry.* 2nd ed. International.
Wolf, P.R. *Elements of Photogrammetry.* McGraw-Hill.

CIVL397 CIVIL ENGINEERING CONSTRUCTION 3

To encompass coffer dams; underpinning and dewatering systems; design of formwork, modular building.

RECOMMENDED READING

Jacoby & Davis. *Foundations for Bridges and Buildings.*
Tomlinson. *Foundation Design & Construction.*

CIVL398 EXCURSIONS 3

Visits to selected works and establishments.

CIVL399 PROFESSIONAL EXPERIENCE

As part of the course requirements, students are required to obtain 12 weeks of approved professional experience; such experience to be obtained in the summer vacation prior to their final year, unless exempted by the Department due to the student's full-time professional employment.

MECH391 HEAT TRANSFER FOR CIVIL ENGINEERS

Refer to "Description of Subjects - Mechanical Engineering".

ECON312 INDUSTRIAL ECONOMICS

Refer to "Description of Subjects - Economics".

400-LEVEL

CIVL401 CIVIL ENGINEERING THESIS

Each student is required to prepare a thesis on a subject or topic approved by the Chairman of the Department.

The subject of a thesis may cover:
(a) a report of original work performed by the student in the laboratory or field;
(b) a theoretical and experimental investigation of a Civil Engineering problem;
(c) a set of drawings and calculations covering a Civil Engineering design.

CIVIL ENGINEERING PRACTICE

For students in full employment each year of appropriate supervised employment that is approved by the Chairman of the Department may, on request, be credited as 4 credit points. A maximum of six such units are allowed described as:

		Credit Points
CIVL410	Civil Engineering Practice 1	4
CIVL411	Civil Engineering Practice 2	4
CIVL412	Civil Engineering Practice 3	4
CIVL413	Civil Engineering Practice 4	4
CIVL415	Civil Engineering Practice 5	4
CIVL416	Civil Engineering Practice 6	4

A Corporate member of the Institution of Engineers representing the organization where the Professional Practice was obtained, must examine and sign for such practice work for it to be applied against the course. A report is to be submitted for each subject, the assessment and evaluation of which will be made by the Departmental Assessment Committee.

CIVL417 STRUCTURAL DESIGN 3

Problem definition, value and criteria selection; generation of proposals; analyses of proposals; selection of design; development of details of a particular design selected.

Feasibility studies and examination of existing work.

RECOMMENDED READING

A reading list will be available 1 week before lectures commence.

CIVL434 HYDRAULIC ENGINEERING

Reservoir design and operation. Spillway design. Hydro-electric schemes. Urban and rural water supply schemes. Sediment transport and river erosion, river control. Flood mitigation schemes.

RECOMMENDED READING

Chow, V.T. *Handbook of Applied Hydrology.*
Henderson, F.M. *Open Channel Flow.*
Linsley, R.K. & Franzini, J.B. *Water Resources Engineering.*
Rouse, H. *Engineering Hydraulics.*
USBR. *Design of Small Dams.*

CIVL445 CIVIL ENGINEERING MATERIALS 1

Properties and applications of timber; physical and mechanical properties of polymers; concrete technology including creep, shrinkage, bond durability, physical and chemical deterioration, permeability, special concretes. Highway material.

RECOMMENDED READING

A reading list will be available 1 week before lectures commence.

CIVL446 CIVIL ENGINEERING MATERIALS 2

Structural applications of plastics, reinforced plastics and plastic laminates; composites; mechanical and physical properties of fibre reinforced materials; principles of adhesives; corrosion of metallic and non-metallic materials.

RECOMMENDED READING

A reading list will be available 1 week before lectures commence.

CIVL455 STRUCTURES 3

Introduction to two-dimensional theory of elasticity. Torsion of non-circular sections; membrane analogy. Small deflection theory of thin plates; numerical methods of solution. General theory of cylindrical and conical shells. Introduction to theory of elastic stability.

RECOMMENDED READING

Gibson. *Design of Cylindrical Steel Roofs.*
Timoshenko, S.P. & Goodier, J.N. *Theory of Elasticity.* 2nd ed. McGraw-Hill.
Timoshenko, S.P. & Woinowsky-Krieger, S. *Theory of Plates and Shells.* 2nd ed. McGraw-Hill.
Timoshenko, S.P. & Gere, J.M. *Theory of Elastic Stability.* 3rd ed. McGraw-Hill.

CIVL456 STRUCTURES 4

Variational principles. Finite element and finite strip methods. Structural dynamics. Computer applications.

RECOMMENDED READING

Cheung, Y.K. *The Finite Strip Method in Structural Analysis.* Pergamon.
Gere, J.M. & Weaver, W. *Analysis of Framed Structures.* Van Nostrand.
Laursen, H.I. *Matrix Analysis of Structures.* McGraw-Hill.
Meek, J.L. *Matrix Structural Analysis.* McGraw-Hill.
Przemieniecki, J.S. *Theory of Matrix Structural Analysis.* McGraw-Hill.
Rubinstein, M.F. *Matrix Computer Analysis of Structures.* Prentice-Hall.
Willems, N. & Lucas, W.M. *Matrix Analysis for Structural Engineers.* Prentice-Hall.
Zienkiewicz, O.C. *The Finite Element Method in Engineering Science.* McGraw-Hill.

CIVL463 FOUNDATION ENGINEERING

Natural soil deposits, discussion of techniques for subsurface investigation, selection of foundation type on different soils, design of individual footings subjected to moment, combined footings and rafts, retaining walls and abutments, anchored bulkheads, braced cuts.

Damage due to construction operations, shoring and underpinning, movements associated with excavations. Techniques for drainage and stabilisation.

RECOMMENDED READING

Karol, R.H. *Soil Mechanics.*
Peck, R.B., Hanson, W.E. & Thornburn, T.H. *Foundation Engineering.*
Terzaghi, K. & Peck, R.B. *Soil Mechanics in Engineering Practice.*
Tschebotarioff, G.P. *Foundations, Retaining and Earth Structures.*

CIVL464 SOIL MECHANICS 3

Conformal mapping in seepage problems, unconfined seepage; analysis of earth dams for rapid draw-down. Applications of anisotropic elasticity; two and three-dimensional consolidation; special triaxial tests; residual shear strength concepts; stress paths; recent theories (stress dilatancy and camclay); numerical techniques applied to soil mechanics; introduction to soil dynamics.

RECOMMENDED READING

Bishop, A.W. & Henkel, D.J. *Measurement of Soil Properties in the Triaxial Test.*
Lambe, T.W. & Whitman, R.V. *Soil Mechanics.*
Terzaghi, K. *Theoretical Soil Mechanics.*

CIVL475 ENGINEERING SURVEYING 4

Field astronomy; underground surveying; hydrographical surveying.

RECOMMENDED READING

Clark, D. *Plane and Geodetic Surveying Vol. II.*

CIVL481 ENGINEERING MANAGEMENT 1

Theory and practice of organization and industry; general principles of law of contract.

RECOMMENDED READING

A reading list will be available 1 week before lectures commence.

CIVL482 ENGINEERING MANAGEMENT 2

Industrial relations. Introduction to cost accounting.

RECOMMENDED READING

A reading list will be available 1 week before lectures commence.

CIVL486 THE CIVIL ENGINEER AND THE ENVIRONMENT

Economic and social evaluation of engineering projects. The interdependence of the roles of the Civil Engineer and Architect, with their responsibilities to the community.

Problems of development and use of resources. Excess waste material. Air pollution, water pollution and noise. Case studies of Civil engineering works, e.g. freeway construction, irrigation vs. flood mitigation, development of unstable areas.

RECOMMENDED READING

The Institution of Civil Engineers. *Standard Method of Measurement of Civil Engineering Quantities.* London. I.C.E., 1953.
The Institution of Civil Engineers. *An Introduction to Engineering Economics.* London. 2nd ed. I.C.E., 1956.
The Institution of Civil Engineers. *The Organisation of Civil Engineering Work.* London. I.C.E., 1960.
The Institution of Civil Engineers. *The Contract System in Civil Engineering.* London. I.C.E., 1946.
The Institution of Engineers, Australia. *General Conditions of Contract for Engineering Works, Structures and Buildings.* Sydney, I.E.A.

CIVL487 TOWN PLANNING

Urbanisation past and present. The modern city in its regional context. Planning processes and techniques. Plans and planners; planning law and administration in New South Wales.

RECOMMENDED READING

Abercrombie. *Town and Country Planning.*
Boyd, R. *The Australian Ugliness.* Cheshire. Melbourne, 1960.
Brown & Sherrard. *An Introduction to Town and Country Planning.* Melbourne University Press, 1968.
Bunker, R. *Town and Country or City and Region.* Melbourne University Press, 1971.

CIVL488 TRAFFIC ENGINEERING AND TRANSPORTATION

(a) Traffic Engineering

This course is basically involved with improving traffic flow without major reconstructions.

(b) Transportation

Transportation Engineering - Roads engineering, airport engineering, railroad engineering, river and coastal engineering, pipeline transportation, belt conveyors, undersea transportation.

Transportation Planning - Introduction to transportation planning, transportation studies, land use.

CIVL488 TRAFFIC ENGINEERING AND TRANSPORTATION (CONT'D)

RECOMMENDED READING

Hennes & Eske. *Fundamentals of Transportation Engineering.* McGraw-Hill.
Institute of Traffic Engineers. *Traffic Engineers Handbook.*

CIVL490 EXCURSIONS 4

Visits to selected works and establishments.

CIVL491 COMPUTER APPLICATIONS IN CIVIL ENGINEERING 1

The writing and use of problem oriented computer programmes, based on I.C.E.S. such as COGO, ROADS, PROJECT, BRIDGE, SEPOL, LEASE, TRAVOL, TOPOLOGY.

RECOMMENDED READING

R67-61 ICES SEPOL 1. *User's Manual.* MIT Press.
R67-69 ICES BRIDGE 1 DESIGN SYSTEM. *General Description and Engineering User's Manual.* MIT.
R67-71 ICES BRIDGE 1 DESIGN SYSTEM. *Problem Formulation and Solutions.* MIT.
R68-6. *Example Problems for ICES COGO 1.* MIT.
R68-9 ICES ROADS 1. *Engineer's Reference Manual.* MIT.
R68-10 ICES TRANSET 1. *Engineering User's Manual.* MIT.
R68-11 ICES PROJECT 1. *Engineering User's Manual.* MIT.
R68-62 ICES TRAVOL 1. *Engineering User's Manual.* MIT.
R69-22 ICES LEASE 1. *User's Manual.* MIT.

CIVL492 COMPUTER APPLICATIONS IN CIVIL ENGINEERING 2

The writing and use of problem oriented computer languages such as STRUDL II.

RECOMMENDED READING

R67-58 ICES TABLE 1. *Engineering User's Manual.* MIT.
R68-56 ICES. *Subsystem Development Primer.* MIT.
R68-91 ICES STRUDL 11. *Engineering User's Manual.* Vols. 1, 2 & 3. MIT.
R69-23. *Computer-Aided Teaching of the Finite Element Displacement Method.* MIT.
R69-34 ICES TABLE 11. *Engineering User's Manual.* MIT.

CIVL493 PUBLIC HEALTH ENGINEERING

Water supply and treatment: Sources of supply, estimates of demand. Water quality standards, methods of water treatment. Atmospheric pollution: sources of pollution, methods of control. Design of sewerage systems, sewage treatment. Trade wastes, effects and treatment. Sanitation: unsewered areas, refuse collection and disposal. Specifications and estimates for public health engineering.

RECOMMENDED READING

Fair, G.M., Geyer, J.C. & Okun, D.A. *Water and waste water Engineering.*
Metcalf and Eddy Inc. *Wastewater Engineering.*
Schroeder, E.D. *Water and Wastewater Treatment.*
Tebutt, T.H.Y. *Principles of Water Quality Control.*

CIVL494 COASTAL ENGINEERING

Theory of deep and shallow water waves. Wind generated waves. Storm surge. Seich and harbour resonance. Wave refraction and breaking. Wave forces on structures. Shoreline processes, erosion and deposition. Tides in oceans and propagation into estuaries. Models for coastal and estuary investigations.

RECOMMENDED READING

Henderson, F.M. *Open Channel Flow.*
Ippen, A.T. *Estuary and Coastline Hydrodynamics.*
USCE-CERC. *Shore Protection Planning and Design.*
Wiegel, R.L. *Coastal Engineering.*

CIVL495 GEOLOGY FOR CIVIL ENGINEERS

Minerals and rocks. Igneous, sedimentary and metamorphic rocks. Geologic structure-faulting, folding and jointing. Principles of geological chronology, methods of correlation, the geologic time scale. Geologic maps and sections. The relationship of geology to Civil Engineering. Engineering properties of rocks. Natural slopes and mass movements. Dams and reservoirs. Tunnels, highways and airfields. Concrete aggregates. Practical and field work.

RECOMMENDED READING

Krynine, D.P. & Judd, W.R. *Principles of Engineering Geology and Geotechnics*. McGraw-Hill.
Schultz, J.R. & Cleaves, A.B. *Geology in Engineering*. Wiley.

CIVL496 ROADS ENGINEERING

Road location and surveys, road design standards, types and functions of pavements, construction methods, earthworks and earth moving machinery. Construction planning and scheduling. Road drainage requirements. Economic analysis and costing. Transport systems and communication networks.

RECOMMENDED READING

A reading list will be available 1 week before lectures commence.

CIVL497 INTRODUCTORY MODERN LANGUAGES

Depending upon the availability, the subject offered will be selected from: French, Italian, Chinese, Bahasa Indonesian, Japanese, Russian.

MINING ENGINEERING

Normal Structure and Study Patterns

In the operation of the course, subjects are scheduled so that it may be completed within a period of 8 to 16 sessions (4 to 8 years). The recommended pattern is that shown and requires a minimum time of 10 sessions (5 years) for completion. Normally the subjects MINE111 and MINE112 should be undertaken as shown but may be deferred on the Chairman of the Department's recommendation. In any case, if professional experience is to be recognized, students must have approval from the Departmental Chairman.

Assessment

All subjects offered for the degree of Bachelor of Engineering in the Department of Civil Engineering normally are assessed by means of a final examination. Set project work, laboratory reports and tutorial assignments may be taken into account in this assessment.

BACHELOR OF ENGINEERING - MINING ENGINEERING

RECOMMENDED PATTERN: TAKEN OVER 10 SESSIONS

Subject to staff and facilities being available, the arrangement of this course will be as shown below. It is possible that there may be variations of the Session in which the subjects are shown to be offered.

Session 1		*Hours per Week*	*Session 2*		*Hours per Week*
CIVL122	Mechanics & Structures	3	CIVL111	Introduction to Design C	3
CIVL191	Building Construction	3	CIVL123	Dynamics for Civil Eng.	3
MATH101	Maths 1A	6	MATH101	Maths 1A	6
			MINE111	Industrial Experience	-

Session 3		*Hours per Week*
CIVL171	Eng. Surveying 1	3
CHEM101	Chemistry 1A	6
PHYS142	Physics	3

Session 4		*Hours per Week*
CIVL142	Materials 1C	6
PHYS142	Physics	3
CIVL193	Excursions 1	-
CIVL172	Eng. Survey Camp*	-
CIVL192	Eng. Construction 1	3
MINE112	Professional Practice 1	-

Session 5		
ELEC291	Applied Elect. 1	3
CIVL281	Comp. Techniques in Civil Eng. 1	3
CIVL225	Eng. Mechanics 1	3
CIVL295	Experimental Eng. 1C	3
CIVL251	Strength of Materials 1	3
GEOL251	Geology for Mining Engineering 1 ø	4
MINE241	Eng. Surveying 2 (Mining)	3
CIVL296	Excursions 2	-

Session 6		
ELEC291	Applied Elect. 1	3
MINE221	Comp. Techniques in Mining Eng.	3
CIVL226	Eng. Mechanics 2	3
CIVL231	Hydraulics 1	3
CIVL243	Materials 2C	3
CIVL213	Structural Design 1M	4
CIVL172	Eng. Survey Camp*	-
MINE231	Engineering Const. 2 (Mining)	3
MINE213	Professional Practice 2	-

Session 7		
MECH241	Thermodynamics 1	3
MINE351	Hydraulics 2 (Mining)	3
GEOL351	Geology for Mining Engineering 2#	6
MINE361	Mining Eng. 1A	6
MINE362	Mining Process Engineering	3
MINE363	Mining Economics	3

*Session 8***		
MINE342	Eng. Surveying 3 (Mining)	4
MINE364	Management of Mining Projects	4
MINE365	Simulation of Mining Operations	6
MINE366	Mining Equipment	3
MINE367	Mine Resources+	3
MINE368	Market Preparation of Mining Products+	3
MINE314	Professional Practice 3	-

Session 9		
MINE491	Mining Eng. Thesis	6
CIVL481	Eng. Management 1	2
MINE469	Mining Engineering 2A	9
	Electives	3

Session 10		
MINE491	Mining Eng. Thesis	10
CIVL482	Eng. Management 2	2
MINE470	Mining Engineering 3	4
	Electives	6

Electives

CIVL463	Foundation Engineering	3
CIVL362	Soil Mechanics 1	3
CIVL363	Soil Mechanics 2	3
CIVL486	The Civil Engineer & the Environment	3
CIVL493	Public Health Engineering	3
CIVL491	Computer Applications in Civil Engineering 1	3
CIVL488	Traffic Engineering & Transportation	3
GEOL2/312	Fossil & Nuclear Fuels	6
GEOL2/313	Economic Geology & Exploration Geochemistry	6
GEOL2/307	Geophysics	6
GEOL2/308	Structural Geology & Geotectonics	6

100-LEVEL

MINE111 INDUSTRIAL EXPERIENCE

Satisfactory experience in industry gained whilst in full employment in the Mining Industry. A report is to be submitted, the assessment and evaluation of which will be made by the Departmental Assessment Committee.

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* Alternative times for Survey Camp
ø There will be approximately 2 days field work.
**Session 8 is of seven weeks duration. Immediately after the examinations, students will commence the intensive period of professional practice by working full time in the Mining industry.
There will be approximately 3 days field work.
+ Contributed to by Departments of Geology and Metallurgy.

MINE112 PROFESSIONAL PRACTICE 1

Satisfactory experience gained whilst in full employment in the Mining Industry. A Corporate member of the Institution of Engineers representing the organisation where the Professional Practice was obtained, must examine and sign for such Practice work for it to be applied against the course. A report is to be submitted for each subject, the assessment and evaluation of which will be made by the Departmental Assessment Committee.

CIVL111 INTRODUCTION TO DESIGN C
CIVL122 MECHANICS & STRUCTURES
CIVL123 DYNAMICS FOR CIVIL ENGINEERS
CIVL142 MATERIALS 1C
CIVL171 ENGINEERING SURVEYING 1
CIVL172 ENGINEERING SURVEY CAMP
CIVL191 BUILDING CONSTRUCTION
CIVL193 EXCURSIONS 1
CIVL192 CIVIL ENGINEERING CONSTRUCTION 1

Refer to "Description of Subjects - Civil Engineering".

CHEM101 CHEMISTRY 1A

Refer to "Description of Subjects - Chemistry".

MATH101 MATHEMATICS 1A

Refer to "Description of Subjects - Mathematics".

PHYS142 FUNDAMENTALS OF PHYSICS B

Refer to "Description of Subjects - Physics".

200-LEVEL

MINE213 PROFESSIONAL PRACTICE 2

Satisfactory experience gained whilst employed full-time in the Mining Industry during the long vacation.
A Corporate member of the Institution of Engineers representing the organisation where the Professional Practice was obtained, must examine and sign for such Practice work for it to be applied against the course. A report is to be submitted for each subject, the assessment and evaluation of which will be made by the Departmental Assessment Committee. (Refer also to MINE314.)

MINE221 COMPUTATIONAL TECHNIQUES IN MINING ENGINEERING

Introduction to Statistical methods, quality control. Sampling processes. Inventory, waiting line and allocation models. Computer formulation.

MINE231 ENGINEERING CONSTRUCTION 2 (MINING)

Drilling equipment and techniques. Explosives. Shaft sinking, layout techniques. Tunnelling. Open excavations. Underpinning and shoring. Introduction to planning and organisation.

MINE241 ENGINEERING SURVEYING 2 (MINING)

Surveying techniques in the development and exploitation of mineral resources and the assessment of mineral properties. Tunnel surveys; transfer of azimuth; bore hole surveying; stope and ore reserves surveys; special mine surveys; mine survey office organisation. Photogrammetric methods.

CIVL213 STRUCTURAL DESIGN 1
CIVL225 ENGINEERING MECHANICS 1
CIVL226 ENGINEERING MECHANICS 2
CIVL231 HYDRAULICS 1
CIVL243 MATERIALS 2C
CIVL251 STRENGTH OF MATERIALS 1
CIVL281 COMPUTATIONAL TECHNIQUES IN CIVIL ENGINEERING 1
CIVL295 EXPERIMENTAL ENGINEERING 1C
CIVL296 EXCURSIONS 2

Refer to "Description of Subjects - Civil Engineering".

ELEC291 APPLIED ELECTRICITY

Refer to "Description of Subjects - Electrical Engineering".

GEOL251 GEOLOGY FOR MINING ENGINEERING 1

Refer to "Description of Subjects - Geology".

MECH241 THERMODYNAMICS I

Refer to "Description of Subjects - Mechanical Engineering".

300-LEVEL

MINE314 PROFESSIONAL PRACTICE 3

Satisfactory experience gained whilst employed full-time in the Mining Industry. A Corporate member of the Institution of Engineers representing the organisation where the Professional Practice was obtained, must examine and sign for such Practice work for it to be applied against the course. A report is to be submitted for each subject, the assessment and evaluation of which will be made by the Departmental Assessment Committee.

MINE342 ENGINEERING SURVEYING 3 (MINING)

Photogrammetric interpretation. Land tenure, relevant acts and regulations. Land utilisation. Environmental factors.

MINE351 HYDRAULICS 2 (MINING)

Surface resistance to flow in ducts and channels. Pipe networks. Unsteady flow. Turbo-machinery. Pumps, performance characteristics. Groundwater flow. Flow through porous media.

MINE361 MINING ENGINEERING 1A

Mining systems and methods applied to coal and metalliferous deposits. Dredging. New entry methods. Ventilation. Transport of materials and personnel. Mine safety. Regulations.

MINE362 MINING PROCESS ENGINEERING

Classification of extraction methods. Application to coal and metalliferous deposits. Sea-floor mining. Liberation, comminution and separation. Chemical extraction. Minerals handling and dewatering.

MINE363 MINING ECONOMICS

Economics of mineral industry. Markets. Grade control. Extractive processes and their influence on product control. Industrial relations.

MINE364 THE MANAGEMENT OF MINING PROJECTS

The establishment of mines, including their organisation, control, costing and human relations. The operation of mines and their management.

MINE365 SIMULATION OF MINING OPERATIONS

Simulation by digital computer of the complete operation of a mine including methods of mining, equipment and transport.

MINE366 MINING EQUIPMENT

Modern equipment used, including that for drilling, blasting, tunnelling, mining, loading, transport, longwall mining, roof support and control, on-line computer control of mining equipment.

MINE367 MINE RESOURCES

Administration, Sampling theory applied to boreholes, ore bodies and milling. Valuation of mineral properties. Resource allocation, finance, labour equipment. Infrastructure and taxation. Size and scope of mining company operations.

MINE368 MARKET PREPARATION OF MINING PRODUCTS

Methods of preparing coal for the market by washing and beneficiation. Handling of by-products.

CIVL362 SOIL MECHANICS 1 CIVL363 SOIL MECHANICS 2

Refer to "Description of Subjects - Civil Engineering".

GEOL351 GEOLOGY FOR MINING ENGINEERING 2

Refer to "Description of Subjects - Geology".

400-LEVEL

MINE469 MINING ENGINEERING 2A

Transport of materials, including conveyors, tracked and trackless transport, shaft conveyances. Wire ropes. Covernment regulations. Storage. Electric power supply and transmission. Mine drainage and control. Compressed air supply and transmission. Noise generation and control. Mine safety and hygiene.

MINE470 MINING ENGINEERING 3

Advanced rock mechanics. Explosives engineering.
Automation and control systems.

MINE491 MINING ENGINEERING THESIS

Each student is required to prepare a thesis on a subject or topic approved by the Chairman of the Department. The subject of a thesis may cover:
(a) a report of original work performed by the student in the laboratory or field;
(b) a theoretical and experimental investigation of a Mining Engineering problem;
(c) a set of drawings and calculations covering a Mining Engineering design.

CIVL463 FOUNDATION ENGINEERING
CIVL481 ENGINEERING MANAGEMENT 1
CIVL482 ENGINEERING MANAGEMENT 2
CIVL486 THE CIVIL ENGINEER AND THE ENVIRONMENT
CIVL488 TRAFFIC ENGINEERS AND TRANSPORTATION
CIVL491 COMPUTER APPLICATIONS IN CIVIL ENGINEERING 1
CIVL493 PUBLIC HEALTH ENGINEERING

Refer to "Description of Subjects - Civil Engineering".

GEOL207/307 GEOPHYSICS
GEOL208/308 STRUCTURAL GEOLOGY AND GEOTECHNICS
GEOL212/312 FOSSIL AND NUCLEAR FUELS
GEOL213/313 ECONOMIC GEOLOGY AND EXPLORATION GEOCHEMISTRY

Refer to "Description of Subjects - Geology".

ECONOMICS

SCHEDULE ENTRIES

Refer to Schedules A and B for approved details of the subjects described in this section. Subjects which also appear in other schedules are:

Subject	*Schedules*
ECON111	C & D
ECON213	C & D
ECON312	C & D

100-LEVEL

ECON101 ECONOMICS I

3 lectures, 1 tutorial per week
Assessment: Examinations, essays, tutorial assignments

An introduction to macroeconomic analysis including the study of national income and the relationships between flows of payments and flows of goods and services which constitute income.

An introductory study of some important Australian economic institutions and changes in these institutions affecting the structure of markets for products, financial markets, and the labour market.

PRELIMINARY READING

Bowden, E.V. *Economics Through the Looking Glass.* Canfield, 1974.

TEXTBOOKS

Boehm, E.A. *Twentieth Century Economic Development in Australia.* Longmans, Sydney, 1971.
Shapiro, E. *Macroeconomic Analysis.* 3rd ed. Harcourt Brace World & Jovanovich, New York, 1974.

RECOMMENDED READING

Arndt, H.W. *A Small Rich Industrial Country.* Cheshire, 1970.
Samuelson, P.A. *Economics.* Australian ed. McGraw-Hill, 1976.*

ECON111 ECONOMICS II

3 lectures, 1 tutorial per week
Assessment: Assignments, essays, examinations

An introduction to microeconomics which includes the market system, demand and supply analysis, the equilibrium of the firm under different market structures, factor pricing and markets, and general equilibrium analysis. The organizational aspects of this analysis will be related to the Australian economy.

PRELIMINARY READING

Dorfman, R. *The Price System.* Prentice-Hall.

TEXTBOOKS

Alchian, A. & Allen, W.R. *Exchange and Production: Competition, Co-ordination and Control.* 2nd ed. Wadsworth, Belmont, 1977.

RECOMMENDED READING

Bilas, R.A. *Microeconomic Theory: A Graphical Analysis.* McGraw-Hill.
Boehm, E.A. *Twentieth Century Economic Development in Australia.* Longmans, Sydney, 1971.
Breit, W. & Hochman, H. *Readings in Microeconomics.* 2nd ed. Holt, Rinehart & Winston, New York, 1971.
Iredale, I. & O'Byrne, G. *Macroeconomic Policy: The Australian Experience.* Clarendon Press, Kensington, 1977.
Koch, J.V. *Microeconomics: Theory and Applications.* Little Brown, Boston, 1976.
Lancaster, K. *Introduction to Modern Microeconomics.* Rand McNally.
Lipsey, R.G. *An Introduction to Positive Economics.* Weidenfeld and Nicolson.
Mansfield, E. *Microeconomics - Theory and Applications.* Norton, New York, 1970.
Mansfield, E. *Microeconomics - Selected Readings.* Norton, New York, 1971.
Mermelstein, D. *Economics - Mainstream Readings and Radical Critiques.* 2nd ed. Random House, New York, 1970.

*This book is recommended as an additional reference for students who have not previously studied Economics.

ECON121 QUANTITATIVE METHODS I

3 lectures, 1 tutorial
Assessment: Examinations and assignments

Analysis of data, use of matrix algebra in economics, measures of central tendency; time series, trend, seasonal, and cyclical components, index numbers, construction and use; introduction to probability theory as it relates to sampling theory and practice.

TEXTBOOKS

Hamburg, M. *Basic Statistics.* Harcourt, Brace & Jovanovich, 1974.
James, D.E. & Throsby, C.D. *Introduction to Quantitative Methods.* J. Wiley, Adelaide, 1973.

ECON122 QUANTITATIVE METHODS II

3 lectures, 1 tutorial
Assessment: Examinations and assignments

Introduction to derivatives of functions as it relates to minimisation and maximisation; minimisation of errors in simple regression analysis; introduction to sampling distribution, hypothesis testing and errors as they relate to simple linear regression.

TEXTBOOKS

As for Quantitative Methods I.

200-LEVEL

ECON205 MACROECONOMICS

3 class hours/week: 2 lectures, 1 tutorial
Assessment: Assignments, essay, examinations

This subject is the second core course in the Macroeconomics stream which begins in first year with Economics I and continues to Public Finance. The aim of the subject is development of monetary analysis. The latter stages of the course use this analysis in conjunction with product market analysis to examine the role of money and how it may influence economic activity. The topics covered are introduction to financial institutions as they relate to money supply and money demand, money supply theory, theories of the demand for money and the tools and techniques of monetary policy.

TEXTBOOKS

Chick, V. *The Theory of Monetary Policy.* Gray-Mills, London, 1973.
Wrightsman, D. *An Introduction to Monetary Theory and Policy.* 2nd ed. Free Press, 1976.

RECOMMENDED READING

Arndt, H.W. & Stammer, D.W. *The Australian Trading Banks.* Cheshire, 1972.
Gibson, W.E. & Kaufman, G.C. *Monetary Economics: Readings on Current Issues.* McGraw-Hill, New York, 1971.
Johnson, D.W. *Macroeconomics: Money, Prices and Income.* John Wiley & Sons, New York, 1976.
Johnson, H.G. & Nobay, A.R. *Issues in Monetary Economics.* Oxford University Press, London, 1974.

ECON206 PUBLIC FINANCE

2 lectures, 1 tutorial per week
Assessment: Examinations, essays and tutorial assignments

The subject is designed to provide an introduction to PUBLIC FINANCE, with special reference to Australia. An analysis of the theoretical issues involved in equity, efficiency and incidence of taxes is used as a basis for an analysis of different types of tax bases. Income tax, company tax, sales taxes, land taxes, turnover taxes, consumption taxes, value added tax and capital gains taxes are all examined. Non tax sources of revenue are also examined as is the Public Debt. Particular attention will be paid throughout to the Australian situation and in particular the effects of the Federal system on Australian Public Finance will be considered.

Public expenditure will also be studied, with particular emphasis on the welfare effects of government expenditure. Questions about the type of goods and services which the government might provide and the size of the government sector will also be examined. The effects of social welfare expenditure and other expenditures on the distribution of income will also be studied.

TEXTBOOKS

Musgrave & Musgrave. *Public Finance in Theory and Practice.* 2nd ed. McGraw-Hill, 1975.

ECON206 PUBLIC FINANCE (CONT'D)

RECOMMENDED READING

Houghton, R. ed. *Public Finance.* Penguin, 1970.
Mathews, R. ed. *Fiscal Federalism: Retrospect and Prospect.* ANU Press.
Richardson, I. *Patterns of Australian Federalism.* ANU Press, 1974.

ECON215 MICROECONOMICS

2 lectures, 1 tutorial/seminar per week
Assessment: Examination and written assignments

This subject emphasises the microeconomic aspects of the industrial sector. After a brief introduction to welfare economics, the concept of the centre firm/periphery firm is developed. With this dichotomy as a basis the following topics are discussed - characteristics of the industrial system, administered prices, goals of firms, competitive strategies, market performance of large firms, the investment decision and the process of growth, uncertainty and planning, information and research and development activity, and the problem of power associated with the activities of the large firm.

TEXTBOOKS

Mansfield, E. *Microeconomics.* 2nd ed. Norton, New York, 1975.
Pickering, J.F. *Industrial Structure and Market Conduct.* Martin Robertson, London, 1974.

RECOMMENDED READING

Averitt, R. *The Dual Economy.* Norton, New York, 1968.
Caves, R. *American Industry, Structure, Conduct, Performance.* Prentice-Hall, N.J., 1972.
Galbraith, J.K. *The New Industrial State.* Penguin, Melb., 1970.
George, K.D. *Industrial Organisation.* Allen & Unwin, London, 1971.
Gilbert, M. ed. *The Modern Business Enterprise.* Penguin, Melb., 1972.
Mansfield, E. *Monopoly Power and Economic Performance.* Rev. ed. Norton, New York, 1968.
Mason, E. *The Corporation and Modern Society.* Atheneum, New York, 1970.
Rothschild, K. *Power in Economics.* Penguin, Melb., 1971.
Sharp, M. *The State the Enterprise and the Individual.* Weidenfeld and Nicolson, London, 1973.
Weiss, L. *Case Studies in American Industry.* Wiley, New York, 1971.
Yamey, B.S. *Economics of Industrial Structure.* Penguin, Melb., 1973.

ECON216 INTERNATIONAL ECONOMICS

2 hrs. lectures, 1 hr. tutorial per week
Assessment: Tutorial exercises, essays and examinations

This subject extends the study of the international economy in the following areas: the structure and pattern of international trade and income levels; the analysis of resource allocation; protection; factor transfers; the foreign exchange market; the balance of payments and its implications in macroeconomic analysis; the international monetary system.

Australian international economic relations will have special attention.

TEXTBOOKS

Caves, R.E. & Jones, R.W. *World Trade and Payments.* Little, Brown & Co., 1973.
Grubel, H.G. *The International Monetary System.* Penguin, 1970.
Snape, R.H. *International Trade and the Australian Economy.* Longmans, 1969.

RECOMMENDED READING

Balassa, B.A. *Changing Patterns in Foreign Trade and Payments.* Norton, 1964.
Bhagwati, J.N. ed. *Economics and World Order.* The Free Press, 1972.

ECON223 QUANTITATIVE METHODS III

2 lectures, 1 tutorial
Assessment: Assignment, term project, examination

Extension to probability theory, Bayes theorem as it relates to decision theory; managerial decision theory, types of decisions, Bayesian decision theory, games theory; inventory problems, replacement problems, queueing theory; discounting procedures, internal rate of return, net present value, Benefit/cost ratio.

TEXTBOOK

Thurauf, R.J. & Klekamp. *Decision Making Through Operations Research.* 2nd ed. John Wiley, New York, 1975.

ECON224 QUANTITATIVE METHODS IV

2 lectures, 1 tutorial
Assessment: Examinations and assignments

Input-output analysis: theory, economic applications; linear programming: theory, economic applications, relation to various types of allocation problems.

TEXTBOOKS

Hughes, A.J. & Grawoig, D.E. *Linear Programming: An Emphasis on Decision Making.* Addison-Wesley, Massachusetts, 1975.
Yan, Chiou-Shuang. *Introduction to Input-Output Economics.* Holt, Rinehart & Winston, 1969.

RECOMMENDED READING

Dorfman, R., Samuelson, P.A. & Solow, R.M. *Linear Programming and Economic Analysis.* McGraw-Hill, 1958.
Isard, W., et. al. *Methods of Regional Analysis: An Introduction to Regional Science.* Wiley, 1960.
Peston, M.H. *Elementary Matrices for Economics.* Routledge & Kegan Paul, 1969.

300-LEVEL

ECON303 ECONOMIC DEVELOPMENT ISSUES

2 lectures, 1 tutorial per week
Assessment: Examinations, essays, tutorial assignments

The subject concentrates on the study of those factors which characterise underdevelopment. Particular emphasis is placed on the institutional aspects of underdevelopment and the way in which these influence the choice of development strategy. Particular emphasis is placed on education and the role of labour in development, including manpower policies. Other major topics include distribution of income, agriculture and land reform; industrialization (with special emphasis on the traditional small-scale sector); trade; aid and foreign investment. Finally, some of the newer theories of development which take account of institutional factors in underdeveloped countries are studied, as well as international factors such as the North-South dialogue.

TEXTBOOKS

Meier, G.M. *Leading Issues in Economic Development.* O.U.P.

REFERENCE BOOKS

Galbraith, J.K. *Economic Development.* Harvard University Press, 1968.
Maddison, A. *Economic Progress and Policy in Developing Countries.* Allen & Unwin, 1970.
Morgan, T. *Economic Development: Readings in Theory and Practice.* Wadsworth, 1970.
Myrdal, G. *Asian Drama.* Vols. 1, 2, 3. Pelican, 1969.
Spiegelglas, S. & Welsh, C.J. *Economic Development: Challenge and Promise.* Prentice-Hall, 1973.

ECON304 ECONOMIC POLICY

3 hrs/week: lecture, organised group work and seminar
Assessment: Assignments, class work and examinations

This is a study of the objectives of macroeconomic policies, the relations between objectives, and the use of monetary, fiscal and other instruments of policy. Particular attention is given to policies concerned with prices, employment and incomes in Australia and the main instruments available for their implementation.

TEXTBOOKS

Nieuwenhuysen, J.P. & Norman, N.R. *Australian Competition and Prices Policy.* Croom Helm, 1976.
Shaw, G.K. *Macroeconomic Policy.* 2nd ed. Martin Robertson, 1973.
Visser, H. *The Quantity of Money.* Martin Robertson, 1974.
Whitehead, D.H. *Stagflation and Wages Policy in Australia.* Longmans, 1973.

RECOMMENDED READING

Bach, G.L. *The New Inflation.* Prentice-Hall, 1973.
Boorman & Havrilesky. *Money Supply, Money Demand and Macroeconomic Models.* Allyn and Bacon, 1972.
Niland & Isaac. *Australian Labour Economics.* SUN, 1975.
Runcie, N. *The Economics of Instalment Credit.* London U.P., 1969.
Trevithick and Mulvey. *The Economics of Inflation.* Martin Robertson, London, 1975.

ECON305 ECONOMIC DEVELOPMENT PLANNING

2 hrs. lectures, 1 hr. tutorial per week
Assessment: Assignments, essays and examinations

This subject emphasises techniques of development planning, and deals with the following topics: models of development and development strategy; programming; project evaluation; budgeting; planning organisation; development plans of some less-developed countries.

TEXTBOOKS

Blitzer, C.R., Clark, P.B. & Taylor, L. eds. *Economy-Wide Models and Development Planning.* O.U.P., 1975.
Little, I.D.M. & Mirrless, J. *Project Appraisal and Planning for Developing Countries.* Heinemann, 1974.

RECOMMENDED READING

Adelman, I. ed. *Practical Approaches to Development Planning.* Johns Hopkins, 1969.
Chakravarty, S. *Capital and Development Planning.* M.I.T. Press, 1969.
Heal, G.M. *The Theory of Economic Planning.* North-Holland, 1973.
Miyazawa, K. *Input-Output Analysis and the Structure of Income Distribution.* Springer-Verlag, 1976.

ECON306 INTERNATIONAL TRADE

2 hrs lectures, 1 hr. tutorial per week
Assessment: Assignments, essays and examinations

This subject examines the theory and application of trade policies. It will include protection by tariff and other means, foreign investment, foreign aid, and customs union.

RECOMMENDED READING

Baldwin, R.E. and Richardson, J.D. eds. *Selected Topics in International Trade and Finance: A Book of Readings.* Little Brown & Co., Boston, 1973.
Caves, R.E. and Jones, R.W. *World Trade and Payments.* Little Brown, 1973.
Corden, W.M. *The Theory of Protection.* Oxford U.P., 1971.
McColl, G.D. ed. *Overseas Trade and Investment.* Penguin, 1972.
Pincus, J.A. *Trade, Aid and Development.* McGraw-Hill, 1967.
Swann, D. *The Economics of the Common Market.* Penguin, 1970.

ECON307 INTERNATIONAL MONETARY ECONOMICS

2 lectures, 1 tutorial
Assessment: Examinations, essays, assignments, seminars

The subject is a study of monetary aspects of International Economics. Balance of payments, theory and policies for internal and external balance will be included, and special attention will be given to international monetary arrangements developed in the post-war period.

RECOMMENDED READING

Baldwin, R.E. & Richardson, J.D. eds. *Selected Topics in International Trade and Finance: A Book of Readings.* Little Brown & Co., Boston, 1973.
Meier, G.M. *Problems of A World Monetary Order.* Oxford University Press Inc., New York, 1974.

ECON311 NATURAL RESOURCE ECONOMICS

1 lecture, 2 seminars
Assessment: Seminar papers

A study of the role of natural resources in the economic process and of the problems associated with the use and development of natural resources. Reference will be made to current problems in resource use. Topics to be studied include: definition and classification of natural resources, their social significance; how natural resources become involved in the economic process, the theory of property rights, the role of property rights, the role of property; the use of natural resources by individuals and by society; natural resources in relation to economic growth and development, classical doctrine of natural resource scarcity, impact of technological change.

TEXTBOOKS

Dorfman, R. & Dorfman, N.S. eds. *Economics of the environment, Selected Readings.* Norton, 1972.
Herfendahl, D.C. & Kneese, A.V. *Economic Theory of Natural Resources.* Merrill, Ohio, 1974.

RECOMMENDED READING

Barnett, H. & Morse, C. *Scarcity and Growth.* Johns Hopkins Press, 1963.
Mishan, E.J. *Cost Benefit Analysis.* Unwin, 1971.
Sinden, J. ed. *The Natural Resources of Australia.* Angus & Robertson, 1972.

ECON312 INDUSTRIAL ECONOMICS

1 lecture, 1 seminar, 1 tutorial
Assessment: Examinations and written assignments

A study of factors affecting production and productivity, with particular regard for industrial organisation in Australia. The emphasis will be on the industry, the economic sector, and the regional and national organisation of industry, as they affect decisions on prices, employment, investment, innovation, output and income distribution.

RECOMMENDED READING

Andrews, P.W.S. and Brunner, E. *Studies in Pricing.* MacMillan, London, 1975.
Australian Government. *Policies for Development of Manufacturing Industry.* (The Jackson Report). Canberra.
Cowling, K. ed. *Market Structure and Corporate Behaviour.* Gray Mills, London, 1973.
Hirst, R.R. & Wallace, R.H. eds. *Studies in the Australian Capital Market.* Cheshire, Melb., 1969.
Lamberton, D.M. ed. *Industrial Economics.* Pelican, Melb., 1972.
Lindgren, K.E. and Aislabie, C.J. *The Australian Firm.* McGraw-Hill, 1976.
Nieuwenhuysen, J.P. and Norman, N.R. *Australian Competition and Prices Policy.* Croom Helm, London, 1976.
Nieuwenhuysen, J.P. ed. *Australian Trade Practices.* 2nd ed. Croom Helm, London, 1976.
Riach, P.A. & Howard, D.O.A., *Productivity Agreements and Australian Wage Determination.* Wiley, Sydney, 1973.
Scherer, F.M. *Industrial Pricing.* McNally, N.Y., 1970.
Stewardson and Davidson. *Economics and Australian Industry.* Longman, Melb., 1974.
Ward, T.S. *The Distribution of Consumer Goods.* Cambridge U.P., 1973.

ECON313 TRANSPORT ECONOMICS

2 lectures, 2 tutorials, fieldwork
Assessment: 1 examination, research report, seminar papers/essay

This subject considers the significance of transport systems in structuring spatial patterns. It examines system concepts, analysis and structure for selected modal systems at various scales - for example, intra-urban transit systems, inter-urban road, rail systems and international air and maritime systems.

It also deals with techniques for network analysis, optimizing flows in networks and related methodology.

TEXTBOOKS

Eliot-Hurst, M.E. *Transportation Geography: Comments and Readings.* McGraw-Hill, New York, 1974.
Taaffe, E.J. & Gauthier, H.L. *Geography of Transportation.* Prentice-Hall, New Jersey, 1973.

RECOMMENDED READING

Bird, J. *Seaports and Seaport Terminals.* Hutchinson, London, 1971.
Blunden, W.R. *The Landuse Transport System. Analysis and Synthesis.* Pergamon, Oxford, 1971.
Bruton, M.J. *Introduction to Transportation Planning.* 2nd ed. Hutchinson, London.
Couper, A.D. *The Geography of Sea Transport.* Hutchinson, London, 1972.
Haggett, P. & Chorley, R.J. *Network Analysis in Geography.* Arnold, London, 1969.
Hay, A. *Transport for the Space Economy: A Geographical Study.* Macmillan, London, 1973.
Hutchinson, B. *Principles of Urban Transportation Planning.* McGraw-Hill, New York, 1974.
Lowe, J.C. & Morydas, S. *The Geography of Movement.* Houghton Mifflin, Boston, 1975.
Meyer, J.R., Kain, J.F. & Wohl, M. *The Urban Transportation Problem.* Harvard University Press, Cambridge, 1969.
Proceedings of the First International Conference on Transportation Research. College d'Europe, Bruges, 1974.
Sharp, C.H. *Transport Economics.* Macmillan, London, 1973.
Thompson, J.M. *Modern Transport Economics.* Pelican, London, 1973.

ECON314 URBAN AND REGIONAL ECONOMICS

3 lectures per week
Assessment: Continuous assessment based on 2 essays, a mid-session and a final examination

Presentation of a general theory of Urban and Regional economic growth. Analysis of inter-urban and inter-regional disparities in levels of unemployment, income, migration and population growth. Examination of evidence relating to the economic costs of such disparities. Analysis of government policies for control of the spatial distribution of economic activities. Examination of the effectiveness of such policies.

Detailed consideration is given to material relating to the Australian economy, and brief consideration to material relating to various other market and command economies.

ECON314 URBAN AND REGIONAL ECONOMICS (CONT'D)

TEXTBOOKS

McMaster, J.C. & Webb, G.R. *Australian Urban Economics.* A.N.Z. Book Co., Sydney, 1976.
Stillwell, F.I.B. *Australian Urban and Regional Development.* A.N.Z. Book Co., Sydney, 1974.
Neutze, M. *Urban Development in Australia.* George Allen & Unwin, Sydney, 1977.

ECON315 MICROECONOMICS - THEORY AND APPLICATION

2 lectures, 1 tutorial
Assessment: Examinations and assignments

The course consists of two-thirds advanced microeconomic theory and one-third theoretical applications. The advanced theory topics would include resource allocation, product distribution, equilibrium analysis, income distribution and factor markets. The areas of application might vary from year to year but would include topics such as economics of education, health, working women and public regulation.

RECOMMENDED READING

Ferguson, C.E. & Gould, J.P. *Microeconomic Theory.* 4th ed. Irwin, Illinois, 1975.
Quirk, J.P. *Intermediate Microeconomics.* SRA, Sydney, 1976.
Tisdell, C.A. *Microeconomics.* Wiley, Sydney, 1972.

ECON316 HISTORY OF ECONOMIC THOUGHT

2 lectures, 1 seminar
Assessment: Examinations and written assignments

A course designed to introduce students to the main developments in economic theory from the 17th to 20th centuries. Internal changes in theories, relationships between successive theories and external influences on this development will be examined. External influences to be considered will include not only historical events but also contemporary climates of opinion. Students will be expected to read widely in both primary and secondary sources.

PRELIMINARY READING

Heilbroner, R.L. *The Worldly Philosophers.* Simon and Schuster, N.Y., 1967.

TEXTBOOKS

Either
Rima, I.H. *Development of Economic Analysis.* R.D. Irwin, Homewood, Illinois, 1972.

Or
Spiegel, H.W. *The Growth of Economic Thought.* Prentice-Hall, Englewood Cliffs, N.J., 1971.

ECON321 ECONOMETRICS

2 lectures, 1 tutorial per week
Assessment: Assignment, term project, examinations

The subject will be an introduction to the use of multiple regression in economic analysis. The major concern will be with the estimation of single equations. A theoretical framework for the second session subject Econometric Models is provided.

TEXTBOOK

Kelejian, H.K. & Oates, W.O. *Introduction to Econometrics.* Harper Row, 1974.

RECOMMENDED READING

Johnston, J. *Econometric Methods.* McGraw-Hill, 1973.

ECON322 MATHEMATICAL ECONOMICS

3 class hours/week: 2 lectures, 1 tutorial
Assessment: Assignments, examinations

Material for this subject will be drawn from the following: Mathematical treatment of Microeconomics and Macroeconomics. Market equilibrium, perfect competition, imperfect competition; welfare economics, pareto optimality; consumption, savings, investment function; Keynesian models, dynamic multiplier; simple models.

ECON322 MATHEMATICAL ECONOMICS (CONT'D)

PRELIMINARY READING

Pervon, V.M. *Quantitative Methods for Business Students.* McGraw-Hill, Sydney, 1976.

TEXTBOOK

Henderson, J.M. and Quandt, R.E. *Microeconomic Theory: A Mathematical Approach.* 2nd ed. McGraw-Hill, New York, 1971.

ECON323 ECONOMETRIC MODELS

2 lectures, 1 tutorial per week
Assessment: Assignments, term project, examinations

This subject will complete the series in Econometrics. It will be an applied course in evaluating and building of Econometric Models. Single equation, recursive and simultaneous models will be considered.

TEXTBOOK

Pindyck, R.S. & Rubinfield, D.L. *Econometric Models and Econometric Forecasts.* McGraw-Hill, 1976.

RECOMMENDED READING

Christ, C.F. *Econometric Models and Methods.* Wiley, 1966.
Dhrymes, P.J. *Econometrics.* North Holland, 1970.
Johnston, J. *Econometric Methods.* 2nd ed. McGraw-Hill, 1973.
Rao, P. & Miller, L.L. *Applied Econometrics.* Wadsworth Pub. Co., 1971.
Theil, H. *Economic Forecasts and Policy.* 2nd ed. North Holland Pub. Co., 1961.
Theil, H. *Principles of Econometrics.* North Holland, 1971.
Wonnacott, R.J. & Wonnacott, T. *Econometrics.* Wiley, 1969.

ECON302 COMPARATIVE ECONOMIC SYSTEMS

3 lectures per week
Assessment: Continuous assessment based on 2 essays, a mid-term and a final examination

Classification of economic systems. A brief review of theoretical arguments about the relative efficiency and non-economic implications of market and command economies. Detailed consideration of the structure and performance of the Soviet, Yugoslav, Japanese, French and American economies. Brief consideration of aspects of the Chinese, West German and Swedish economies.

TEXTBOOKS

Dirham, J.B. & Plummer, J.L. *An Introduction to the Yugoslav Economy.* Merrill, Columbus, Ohio, 1973.
Gregory, P.R. & Stuart, R.C. *Soviet Economic Structure and Performance.* Harper & Row, New York, 1974.

400-LEVEL

ECON431 ADVANCED ECONOMIC ANALYSIS

6 hrs. of tuition and supervised class work
Assessment: Assignments, class work and examinations

This subject, together with the completion of the thesis, occupies the final year of the full-time Honours degree course. It consists of six parts, each of which normally requires 21 class hours. The whole amounts to a survey of advanced economic theory; it normally includes advanced macro- and micro-economics, cyclical fluctuations, economic growth, monetary theory, international economics, welfare, and history of economic thought.

ECON441 HONOURS THESIS

3 hrs. seminar and consultation with supervisor as required
Assessment: Thesis

At the end of second session students enrolled for the bachelor degree with honours in Economics are required to submit a thesis, based on independent study in theoretical or applied economics. The field of inquiry and the subject must be approved by the Chairman of the Department.

EDUCATION

SCHEDULE ENTRIES

Refer to Schedule A for approved details of the subjects described in this section.

200-LEVEL

Both of the subjects offered at this level are intended as introductory courses in educational studies in a social context. Normally, students enrolling in these courses shall have passed not fewer than three full first-year subjects or the equivalent*, although this condition may be modified in special circumstances by the Chairman of the Department.

EDUC211 EDUCATIONAL PSYCHOLOGY AND EDUCATIONAL RESEARCH

3 hrs a week: Lectures, seminars and tutorials
Assessment: Examinations, tests, assignments

(a) A lecture course of one hour a week through the year, with eight hours of laboratory experience.
A treatment in the educational context of the behaviour of normal children, emphasising problems of perception, learning, motivation and environmental influences, and with special reference to the adolescent.

(b) Educational Research Methodology. One hour a week for one session, with tutorials. An introduction to basic statistical procedures, test construction and experimental design in relation to educational studies.

TEXTBOOKS

Anastasiow, N.H. et al. *Educational Psychology: a Contemporary View.* C.R.M. Books, Del Mar, Calif., 1973.
de Lacey, P.R. *So Many Lessons to Learn.* Penguin, Ringwood, Vic., 1974.
Piaget, J. *Science of Education and the Psychology of the Child.* Longmans, London, 1971.
Wiersma, W. *Research Methods in Education: An Introduction.* Lippincott, New York, 1969.

EDUC212 EDUCATIONAL SOCIOLOGY AND PHILOSOPHY IN EDUCATION

3 hrs a week: Lectures, seminars and tutorials
Assessment: Examinations, tests, assignments

(a) Educational Sociology: A course of one hour a week for one year, with additional tutorials. The Sociology of Education section of the Education II course will include enquiries into the role of the school in society, teaching as a career, the teacher's role in the education system, role conflict in teaching, and social problem areas of students.

(b) Philosophy in Education: The course will serve to show the role philosophy has had to play in determining the practices of education. It will also suggest that this role is continuing, and that one of its essential functions, today, is to bring about an understanding of the function of education in an age of change and innovation. The course in particular will attempt: to give an account of the nature of philosophy and education, and the nature of their interdependence; to examine the traditional theories of education; and to provide a philosophical understanding of the commoner concepts of education.

TEXTBOOKS

Hargreaves, D. *Interpersonal Relations and Education.* Routledge and Kegan Paul, London, 1972.
Lawrence, E. *The Origins and Growth of Modern Education.* Penguin, Harmondsworth, 1970.
Schofield, H. *The Philosophy of Education.* George Allen and Unwin, 1972.
Shepard, J.M. *Kaleidoscope: Adapted Readings for Introductory Sociology.* Harper and Row, New York, 1973.

300-LEVEL

Five subjects are listed at 300-level, of which not more than three may be counted towards a degree.

EDUC311 DEVELOPMENTAL PRINCIPLES IN EDUCATION

3 hrs a week: Lectures, seminars, tutorials
Assessment: Examinations and assignments

This unit offers an opportunity to study the concept of human development, emphasising cognition, and a selection of contemporary theories of development within the context of contemporary society and education. Course work will include a child study.

*The equivalent of *one* full first-year subject is 12 credit points.

EDUC311 DEVELOPMENTAL PRINCIPLES IN EDUCATION(CONT'D)

TEXTBOOKS

Bruner, J.S. *Beyond the Information Given.* Allen & Unwin, London, 1974.
Ginsburg, H. & Opper, S. *Piaget's Theory of Intellectual Development.* Prentice-Hall, Englewood Cliffs, 1969.

EDUC312 COMPARATIVE EDUCATION

3 hrs a week: Lectures, seminars, tutorials
Method of Assessment: Examinations and assignments

A comparative treatment of schooling in the social context, the preparation of teachers and tertiary education in a selection of cultures in relation to the Australian educational scene.

TEXTBOOKS

Bereday, G.Z.F. *Essays on World Education.* Oxford University Press, London, 1969.
Bereday, G.Z.F. *Comparative Method in Education.* Holt, Rinehart & Winston, New York, 1964.
Jones, P.E. *Comparative Education.* University of Queensland Press, 1973.

EDUC313 HISTORY OF EDUCATION

3 hrs a week: Lectures, seminars, tutorials
Assessment: Examinations and assignments

This unit comprises: An introduction to the histories of Western and Australian education, based on a study of individuals, institutions and cultures and the development of educational systems.

TEXTBOOKS

Austin, A.G. *Selected Documents in Australian Education.* Pitman, London, 1963.
Boyd, W. *History of Western Education.* Black, London, 1964.
Plato. *The Republic.* (Any edition.)

EDUC314 EDUCATIONAL RESEARCH METHODOLOGY

3 hrs a week: Lectures, seminars, tutorials
Assessment: Examinations and assignments

This unit offers a study of the nature of educational research, surveys and experiments, and the evaluation of research, and report writing. Problems in designing conventional and action research programmes will be discussed.

TEXTBOOKS

Budd, W.C. and Kelly, S.P. *Educational Research by Practitioners.* Harper & Row, London, 1970.
Dayton, C.M. *The Design of Educational Experiments.* McGraw-Hill, New York, 1970.

EDUC315 PHILOSOPHY IN EDUCATION

3 hrs a week: Lectures, seminars, tutorials
Assessment: Examinations and assignments

A study is offered of recent and contemporary ideas and philosophy in education, including educational outcomes of traditional and contemporary philosophical points of view, and a consideration of aims of education and means by which they might be realized.

TEXTBOOKS

Brown, L.M. *Aims of Education.* Teachers College Press, Columbia University, New York, 1970.
O'Connor, D.J. *An Introduction to the Philosophy of Education.* Routledge and Kegan Paul, London, 1957.

400-LEVEL

The main purpose of Education IV is to provide an Honours year for those students wishing to specialise in educational studies. Considerable emphasis will be laid upon research and research methodology, and students will be expected to apply their knowledge in research to one or more of the areas of Educational Psychology, Educational Sociology, Comparative Education, History of Education, Philosophy of Education and Theories of Education. A thesis equivalent in time to one-third of the year's work is also required. Satisfactory performance at third year level is a pre-requisite and entry to the Honours year will be determined by the Academic Senate on the advice of the Departmental Chairman.

It is hoped that students who complete an Honours degree through Education IV might continue their interest in research subsequently through higher degree work.

EDUC401 EDUCATION IV

8 hrs of lectures/seminars; 4 hrs of tutorials
Assessment: Formal examinations, test, assignments and associated projects (if appropriate)

All students must take the following topics totalling 16 credit points in the area of educational Research Methodology and Design:

The logic of educational research
Descriptive techniques
Inferential techniques
Sampling problems
Validity of experiments in social settings
Statistical and scientific hypotheses
Quasi-experimental designs
Generalisations and predictions
Applications of research to the classroom
Applications of research to education

Students must also complete 16 credit points comprising two groups of the following topics:

Educational Psychology Topics A

Language in early childhood
Language in the school
Continuity and discontinuity in development tests of conceptual and language development
Special topic

Educational Psychology Topics B

Social class and intelligence
Ethnic differences and mental growth
Compensatory education
Literacy and numeracy programmes
Special topic

Educational Sociology Topics A

The family and education
Social class and education
The economy and education

Educational Sociology Topics B

The political functions of education
The use of education for selection
Implications of teaching becoming a profession
The roles of the teacher

Comparative Education and History of Education

Systematic study of education systems selected from Australia, U.S.A., U.K., France, Japan, S.E. Asia and China.

Selected case study analyses showing the problem and inductive approaches in comparative methodology.

Interdisciplinary contributions to Comparative Education.

The Australian context

Historical antecedents to formal education systems in selected countries.

Philosophy of Education and Theories of Education

Impact of philosophers on education
Application of philosophical methods of enquiry to education

Social philosophies and their impact on education
Survey of major educational theories and theorists

Mass compulsory education in post-industrial society

EDUC401 EDUCATION IV(CONT'D)

TEXTBOOKS

Beck, J., Jenks, C., Keddie, N. & Young, M.F.D. *Worlds Apart (Readings for a Sociology of Education).* Collier Macmillan, London, 1976.
Birch, H.G. and Gussow, J.D. *Disadvantaged Children.* Grune and Stratton, London, 1970.
Edgar, D.E. (ed.) *Sociology of Australian Education.* McGraw-Hill, Sydney, 1975.
Yearbooks of Education, 1948-1975. Evans Bros., London.
Gephart, W.J. and Ingle, R.B. *Educational Research.* Merrill, Columbus, Ohio, 1969.
Rubin, D. *Teaching Elementary Language Arts.* Holt, Rinehart and Winston, New York, 1975.
Sattler, J.M. *Assessment of Children's Intelligence.* Saunders, Philadelphia, 1974.
Seaborne, P.C. *An Introduction to the Dienes Mathematics Programme.* University of London Press, London, 1975.
Ullich, R. *Three Thousand Years of Educational Wisdom.* New York, 1973.

ELECTRICAL ENGINEERING

Assessment

All subjects offered by the Department of Electrical Engineering are normally assessed by means of a final examination. In addition, set project work, laboratory reports and tutorial problems undertaken by the student throughout the session may also be taken into account. Lecturers in the individual subjects will provide details at the beginning of each session.

SCHEDULE ENTRIES

Refer to Schedule C for approved details of the subjects described in this section. Subjects which also appear in other schedules are:

Subject	*Schedules*
ELEC101	A
ELEC191	A
ELEC291	A & D
ELEC292	A
ELEC293	A & D
ELEC294	A
ELEC295	A
ELEC391	A
ELEC392	A

1. CORE MATERIAL

ELEC101 ELECTRICAL ENGINEERING 1

A total of 84 hrs of lectures and tutorials

Introduction to electrical quantities and measurements, circuit analysis, energy conversion, electronic devices and circuits.

RECOMMENDED READING

Edminister, J.A. *Electric Circuits.* Schaums Outline Series.
Fitzgerald, A.E., Higginbotham, D.E. & Grabel, A. *Basic Electrical Engineering.* 4th ed. McGraw-Hill, 1975.
Smith, R.J. *Circuits, Devices and Systems.* 2nd ed. Wiley, 1970.

ELEC151 INSTRUMENTATION AND MEASUREMENTS

42 hrs of lectures and laboratory work

Data presentation and errors. Basic electrical measuring, recording and display instruments. Characteristics and measurement of circuit elements. Digital and analogue signals. Transducers.

TEXTBOOK

Wolf, S. *Guide to Electronic Measurements and Laboratory Practice.* Prentice-Hall, 1973.

RECOMMENDED READING

Oliver, B.M. & Cage, J.M. *Electronic Measurements and Instrumentation.* McGraw-Hill, 1971.
Wedlock, B.D. & Roberge, J.K. *Electronic Components and Measurements.* Prentice-Hall, 1969.

ELEC203 CIRCUIT THEORY 2A

84 hrs of lectures and tutorials

Development of circuit analysis from field descriptions; validity of KCL and KVL; topological properties of networks; mesh current, node voltage and cut-set analysis; classical solution of network equations; special case of sinusoidal steady state, phasor and impedance concepts. Generalised network analysis via Laplace transforms.

Network theorems, sinusoidal steady state, 3 phase systems. Further analysis in the S-domain; Fourier series and transform applications; two-port networks; state space and matrix methods.

TEXTBOOKS

Desoer, C.A. and Kuh, E.S. *Basic Circuit Theory.* McGraw-Hill, 1969.
Edminister, J.A. *Electric Circuits.* Schaum, 1972.

ELEC301 CIRCUIT THEORY 3A

42 hrs of lectures and tutorials

Filters, introduction to random signal theory, correlation functions, power density spectrum, probabilistic network analysis, optimal design of filters, computational aspects of network analysis.

TEXTBOOK

Cooper, G.R. and McGillem, C.D. *Methods of Signal and Systems Analysis.* Holt and Rinehart, 1967.

RECOMMENDED READING

Kuo, F. and Magnuson, G. *Computer-oriented circuit design.* Prentice-Hall, 1969.

ELEC211 ELECTRONICS 1

42 hrs of lectures and tutorials

Semi-conductor devices and device models; current transport in semi-conductors, diodes, bipolar and field-effect transistors, circuit modelling, biasing, single-stage wideband amplifiers, frequency response, design procedures.

TEXTBOOK

Gray, P.E. & Searle, C.L. *Electronic Principles: Physics, Models, Circuits.* Wiley, 1969.

RECOMMENDED READING

Millman, J. & Halkias, C.C. *Integrated Electronics, Analog and Digital Circuits and Systems.* McGraw-Hill, 1972.

ELEC311 ELECTRONICS 3A

84 hrs of lectures and tutorials

Analysis and design of multistage amplifiers, feedback amplifiers, and sinusoidal oscillators. Applications of integrated circuits as building blocks for linear and non-linear analog systems.

Analysis and design of digital, switching, and power circuits: IC logic gates, combinational digital circuits; discrete-component multivibrators and IC flip-flops, sequential circuits; basic methods for analog/digital conversions; stabilised power supplies, thyristor regulators.

TEXTBOOK

Millman, J. & Halkias, C.C. *Integrated Electronics, Analog and Digital Circuits and Systems.* McGraw-Hill, 1972.

ELEC221 ENERGY CONVERSION AND DISTRIBUTION 1
ELEC322 ENERGY CONVERSION AND DISTRIBUTION 2
ELEC423 ENERGY CONVERSION AND DISTRIBUTION 3

Each of the above subjects comprises 42 hrs of lectures and tutorials. The details for the above 3 subjects are as follows:

Recapitulation of basic laws in electro and magneto statics and dynamics. Properties of ferro-magnetic materials and magnetic circuits. Energy conversion principles, with emphasis on electro mechanical devices. Coupled circuits, polyphase and instrument transformers; dynamic circuit theory; transducers.

Steady state and transient performance of d.c. machines. Steady state performance of synchronous, induction and commutator machines.

Transmission line parameters and system modelling. Load flow analysis; frequency and voltage control; maximum power transfer, steady state stability. Symmetrical and unsymmetrical fault calculations.

Static converters; applications to a.c. and d.c. machine control.

TEXTBOOKS

Energy Conversion and Distribution 1:
Gourishanker, V. & Kelly, P.H. *Electro-Mechanical Energy Conversion.* Intext Co., 1973.

Energy Conversion and Distribution 2:
Fitzgerald, A.E., Kingsley, C.& Kusko, A. *Electric Machinery.* 3rd ed. McGraw-Hill, 1971.

Energy Conversion and Distribution 3:
Elgerd, O.I. *Electric Energy Systems Theory.* McGraw-Hill, 1971.

ELEC131 COMPUTERS 1
ELEC331 COMPUTERS 2
ELEC431 COMPUTERS 3

Each of the above subjects comprises 42 hrs of lectures and tutorials. The details for the above 3 subjects are as follows:

History of computers, introduction to adders, integrators, coef. pots, analogue programming, engineering applications. Number systems, codes, description of digital computers and general organisation, computer peripherals, iterative techniques in engineering design. Use and applications of high-level and assembler languages.

Switching algebra, combination and sequential logic, use and application of assembler languages. Analogue computer components, setting up of linear systems, time and magnitude scaling.

Advanced switching algebra for combination and sequential circuits, error detection, cycles, races hazards. Advanced work on digital computer organisation and interfacing. Representation of higher-order linear, non-linear and time varying systems on analogue computers. Introduction to Hybrid computers. Simulation and modelling of engineering systems on computers.

TEXTBOOKS

Computers 1:
Cluley, J.C. *Electronic Computers.* Oliver & Boyd, 1967.
McCracken, D.D. *A Guide to Fortran IV Programming.* Wiley.

Computers 2:
Nagle, H. Troy Jr., Carroll, B.D. & Irwin, J. David. *An Introduction to Computer Logic.* Prentice-Hall, 1975.

Computers 3:
Hill, F.J. & Peterson, G.R. *Introduction to Switching Theory and Logical Design.* 2nd ed. Wiley, 1974.

ELEC343 CONTROL SYSTEMS

84 hrs of lectures and tutorials

Description and physical systems by differential equations - Lagrange's equations; the convolution integral, transfer functions, block diagrams and signal flow graphs; feedback and its effects; analog computer simulation; stability by Routh-Hurwitz criteria; frequency response on polar and rectangular plots; stability by Nyquist criterion and its extension to Bode Plots; System types and performance with standard inputs.

Root locus methods, frequency response and transient response from root locus diagram; performance criteria and their application to design; synthesis of single-input single-output linear systems by root locus, and Bode diagram; minor loop design.

TEXTBOOK

Kuo, B.C. *Automatic Control Systems.* 3rd ed. Prentice-Hall, 1975.

ELEC251 LABORATORY 2A
ELEC252 LABORATORY 2B
ELEC352 LABORATORY 3A
ELEC353 LABORATORY 3B
ELEC354 LABORATORY 3C
ELEC355 LABORATORY 3D
ELEC456 LABORATORY 4

Each of the above subjects comprises 42 hrs of laboratory work and tutorials. The details for the above 7 subjects are as follows:

The laboratory programmes for the BE and BSc(Eng) courses will normally cover the following topics:

Measuring equipment and techniques relevant to electric, magnetic and electro-mechanical circuits and systems.

Response of first and higher order systems; characteristics of sinusoidally excited circuits; harmonic analysis; amplifiers; regulated power supplies; wave shaping circuits; oscillators, digital circuits.

Transformers, d.c., induction and synchronous machines, dynamic characteristics; control circuits and simulation, frequency response, effects of feedback.

Advanced modern measurement equipment and techniques. Selected topics may include: circuit measurement with deterministic and random signals, R.F. and microwave measurements, digital and analog circuits and systems, advanced control circuits for machine.

ELEC461 COMMUNICATIONS 1

42 hrs of lectures and tutorials

Basic structure of communication systems; analog modulation and detection, analysis and methods of signal processing, performance of AM and FM systems in presence of noise; binary PCM and ΔM, quantization, error probability. Comparison of information - transmission systems.

TEXTBOOK

Taub, H. & Schilling, D.L. *Principles of Communication Systems.* McGraw-Hill, 1971.

ELEC463 SIGNAL TRANSMISSION

42 hrs of lectures and tutorials

Wave propagation in cables, wageguides and atmosphere; radiation and antennas.

TEXTBOOK

Ramo, Whinnery & Van Duzer. *Fields & Waves in Communication Electronics.* McGraw-Hill, 1965.

ELEC457 THESIS

This comprises two projects (a minimum of 112 hrs in session 1 and 154 hrs in session 2).

Each project involves the design and construction of experimental apparatus together with extensive laboratory testing. Where possible the projects are related to the research programme of the Department and are chosen to develop the students' initiative. Each student is required to deliver a seminar paper and to prepare a thesis on the result of the project work.

INDUSTRIAL OPTIONS

Students in full-time employment become eligible to include Industrial Options in their course. Such inclusion is subject to the approval of the Chairman of the Department.

ELEC181	Industrial Option 1
ELEC282	Industrial Option 2
ELEC283	Industrial Option 3
ELEC384	Industrial Option 4
ELEC485	Industrial Option 5

A student enrolled in an Industrial Option is required to submit written reports and to participate in seminars within the Department. These will deal with a critical analysis and reporting of general (or nominated specific) aspects of Professional Practice as experienced by the student. A Corporate Member of the Institution of Engineers representing the organisation wherein the Professional Practice is obtained must examine and sign for such Professional Practice work before it can be accepted and assessed by the Departmental Assessment Committee.

2. ELECTIVES

All single session subjects.
(3 hrs per week)

METL201 MATERIALS 1

42 hrs of lectures and tutorials

Atomic bonding and the nature of solids; phase relationship and micro structure; mechanical behaviour of materials, electrical and magnetic properties; corrosion and oxidation of metals.

RECOMMENDED READING

Guy, A.G. *Introduction to Materials Science.* McGraw-Hill.
Hanks, R.W. *Materials Engineering Science.* Harcourt, Brace & World.
Van Vlack, L.H. *Elements of Materials Science.* Addison-Wesley.

ELEC404 CIRCUIT THEORY 4

Network functions, analysis and synthesis techniques, computer-aided approaches, large scale analysis, state space methods, network optimisation, signal flow graphs.

ELEC404 CIRCUIT THEORY 4 (CONT'D)

TEXTBOOK

Ruston, H. & Bordogna, J. *Electric Networks, Functions, Filters and Analysis.* McGraw-Hill, 1966.

RECOMMENDED READING

Chua, L.O. & Pen-Min Lin. *Computer-Aided Analysis of Electronic Circuits.* Prentice-Hall, 1975.

ELEC424 ELECTRIC ENERGY SYSTEMS

System modelling, application of the computer to load flow analysis. Optimum operating conditions, frequency and voltage control. Economic aspects of power transmission.

Unsymmetrical fault analysis, interruption theory, surges, transient stability. Transient characteristics of synchronous machines. System protection.

TEXTBOOK

Elgerd, O.I. *Electric Energy Systems Theory.* McGraw-Hill, 1971.

ELEC425 GENERALISED MACHINE THEORY

Development of machine models, transformations, methods of solution, small signal responses, transfer and weighting function representation, with emphasis on synchronous and induction machines.

TEXTBOOK

No set text.

ELEC426 ELECTROMECHANICAL DYNAMICS

42 hrs of lectures and tutorials

Field description of electromechanical interaction, field transformations; generalised Ohms Law for plasma, transition to liquid and solid conductors; magnetic diffusion, levitation, charge relaxation; forces in magnetic and electrostatic field systems, Maxwell stress tensor, magnetization and polarisation force densities; electromechanical dynamics of solid continua, incompressible fluids and compressible fluids.

TEXTBOOK

Woodson, H.H. and Melcher, J.R. *Electromechanical Dynamics.* Vols. 1, 2, 3. John Wiley, 1968.

ELEC432 COMPUTERS 4

42 hrs of lectures and tutorials

Aspects of: mini computers, peripherals, interfaces, data conversion, microprocessors, memory elements and organisation.

RECOMMENDED READING

Hill, F.J. & Peterson, G.R. *Digital Systems: Hardware Organisation and Design.* Wiley, 1973.
Peatman, J.B. *The Design of Digital Systems.* McGraw-Hill, 1972.

ELEC443 CONTROL 3

Concepts of state and state variables. Linear analysis. Concepts of controllability and observability. State feedback. Introduction to non-linear and optimal control and signal modulated systems.

RECOMMENDED READING

D'Azzo, J. & Houpis, C. *Linear Control System Analysis and Design.* McGraw-Hill, 1975.
Elgerd, O.I. *Control System Theory.* McGraw-Hill, 1967.

ELEC462 COMMUNICATIONS 2

Scope: analysis and design of communication circuits for analog signal processing and frequency-domain multiplexing.

TEXTBOOK

Clark, K.K. & Hess, D.T. *Communication Circuits: Analysis and Design.* Addison-Wesley, 1971.

ELEC472 ELECTRICAL PROPERTIES OF MATERIALS

Electric conduction and breakdown in solid, liquid and gaseous dielectrics; field strength calculations using Laplace and Poisson's equations. High voltage testing.

TEXTBOOK

No set text.

ELEC481 PROBABILITY AND RANDOM PROCESSES

Probability theory; random variables, distribution and density functions, mean values and moments, ergodicity and stationarity; correlation functions, spectral densities, linear system response to random inputs; filtering and prediction.

TEXTBOOK

Thomas, J.B. *An Introduction to Applied Probability and Random Processes.* Wiley, 1971.

3. SERVICING SUBJECTS

ELEC191 COMPUTERS 1S

Comprising: ELEC151 Instrumentation and Measurements and ELEC131 Computers 1

ELEC291 APPLIED ELECTRICITY 1

Topics selected from circuit theory, electronic devices and their application in linear and digital circuits.

TEXTBOOK

Smith, R.J. *Circuits, Devices & Systems.* 3rd ed. Wiley, 1976.

ELEC292 APPLIED ELECTRICITY 2

Electromagnetic devices, d.c. and a.c. machines, transmission systems, and instrumentation.

TEXTBOOK

Smith, R.J. *Circuits, Devices and Systems.* 3rd ed. Wiley, 1976.

ELEC293 COMPUTERS 1M

Switching algebra, combination and sequential logic. Number systems and codes. Use and application of high-level and assembler language.

Digital computer organisation and control, arithmetic and memory elements, input-output devices.

Analogue computer components, setting up linear systems, time and magnitude scale factors.

TEXTBOOKS

Cluley, J.C. *Electronic Computers.* Oliver & Boyd, 1967.
Nagle, H. Troy Jr., Carroll, B.D. & Irwin, J. David. *An Introduction to Computer Logic.* Prentice-Hall, 1975.

ELEC294 INTRODUCTORY SYSTEMS THEORY

Definition and measures of information; introduction to some of the properties of the measures and to the idea of channel capacity and coding. The relationship between thermodynamics and information; information and organisation.

Concept and examples of systems, dynamic properties; modelling; introduction to methods of analysis of linear systems with extension to non-linear problems. Analogue simulation and system model analysis by digital and analogue computer. Deterministic and stochastic responses and models; continuous and discrete signals.

RECOMMENDED READING

Bertalanfly, L. *General Systems Theory.* Allen Lane, 1971.
Brillouin, L. *Science and Information Theory.* 2nd ed. Academic Press, 1971.
Heinmets, F. *Concepts and Models of Biomathematics.* Marcel Dekter, 1969.
Patten, B.C. *Systems Analysis and Simulation in Ecology.* Vol.2. Academic Press, 1972.
Truxal, J.G. *Introductory System Engineering.* McGraw-Hill, 1972.

ELEC295 COMPUTERS 2S

Comprising: ELEC331 Computers 2
Plus 42 hrs of appropriate tutorial and practical work

ELEC391 COMPUTERS 3S

Comprising: ELEC431 Computers
Plus 42 hrs of appropriate tutorial and laboratory work

ELEC392 COMPUTERS 4S

56 hrs of lectures and tutorials

Aspects of: mini-computers, peripherals, interfaces, data conversion, microprocessors, memory elements and organisation.

RECOMMENDED READING

Hill, F.J. & Peterson, G.R. *Digital Systems: Hardware Organisation and Design.* Wiley, 1973.
Peatman, J.B. *The Design of Digital Systems.* McGraw-Hill, 1972.
Woollens, D.J. *Introduction to Computer Design.* McGraw-Hill, 1973.

ENGLISH

The Department of English offers subjects in English Language at 100-, 200-, 300- and 400 (Honours)- level and in English Literature at 100-, 200-, 300- and 400-(Honours) level in the BA Degree course.

A comprehensive course of study in English comprises not less than 60 credit points taken from 100-, 200- and 300- level subjects. Entry to 400- level English is determined by Senate on the recommendation of the Departmental Chairman.

Each subject comprises at least 28 hours (2 hours per week per session) of lectures, seminars and tutorials. Not all subjects will be offered at both day and evening times. Furthermore, the Departmental Chairman reserves the right to place a limit on numbers in particular subjects and to advise students on the subjects best suited to their qualifications and purposes. *As many of the subjects described in the following pages will be offered as can be with the staff available.*

In all subjects, students are required to hand in written assignments. English IV Honours students are also required to write a thesis of 10,000 words on a topic approved by the Professor of English.

All students are required to possess *The Concise Oxford English Dictionary* and H. Coombes' *Literature and Criticism* (Penguin) in addition to the texts prescribed for the subjects in which they are enrolled. Students intending to pursue a comprehensive course in English are also advised to obtain *The Oxford Anthology of English Literature,* 2 vol. edn., ed. Kermode and Hollander.

SCHEDULE ENTRIES

Refer to Schedule A for approved details of the subjects described in this section.

100-LEVEL

ENGL101 INTRODUCTION TO MODERN LITERATURE

2 lectures, 1 tutorial per week
Assessment (each session): 1 essay, 1 tutorial paper, 2 practical criticism exercises

First Session

Critical Method and Modern Poetry. Problems and techniques involved in the criticism of poetry; critical discussion of selected poems.

TEXTBOOKS

Brooks, C. and Warren, R.P. *Understanding Poetry.* 4th ed. Holt, Rinehart & Winston, New York, 1976.
Mack, M., Dean, L. & Frost, W. eds. *Modern Poetry.* 2nd ed. Prentice-Hall, Englewood Cliffs, N.J., 1961.

Second Session

Critical Method and Modern Prose. The problems and techniques involved in the criticism of prose; critical discussion of selected modern short stories and novels.

PRELIMINARY READING

O'Conner, Frank. *The Lonely Voice.* Macmillan, London, 1963.
Schorer, Mark ed. *The Story.* Prentice-Hall, N.J., 1963.

TEXTBOOKS

Warren, R.P. and Erskine, A. eds. *Short Story Masterpieces.* Dell, New York, 1970.
Lawrence, D.H. *The Prussian Officer.* Penguin Books, 1968.
Lawrence, D.H. *Lady Chatterley's Lover.* Penguin Books, 1968.
Hemingway, Ernest. *The Essential Hemingway.* Penguin Books, 1974.
Conrad, Joseph. *Youth.* Penguin Books, 1976.
Conrad, Joseph. *Heart of Darkness.* Penguin Books, 1975.
Conrad, Joseph. *Lord Jim.* Penguin Books, 1973.
Joyce, James. *Dubliners.* Viking Press, 1968.
Joyce, James. *A Portrait of the Artist as a Young Man.* Penguin Books, 1968.
White, Patrick. *Riders in the Chariot.* Penguin Books, 1970.
White, Patrick. *The Solid Mandala.* Penguin Books, 1970.

RECOMMENDED READING

Forster, E.M. *Aspects of the Novel.* Penguin Books, 1962.
Kettle, A. *An Introduction to the English Novel.* 2 vols. Hutchinson, London, 1953.
Pritchett, V.S. *The Living Novel.* Chatto and Windus, London, 1946.

ENGL103 INTRODUCTION TO ENGLISH LANGUAGE STUDIES A

2 lectures, 2 tutorials per week
Assessment: 1 phonetics exercise, 2 tutorial papers, 2 class exercises

(i) The Development of English up to the Middle English Period, and

(ii) Introduction to Mediaeval Life and Thought

TEXTBOOKS

Baugh, A.C. *History of the English Language.* 2nd ed. Routledge and Kegan Paul, 1976.
Mitchell, A.G. and Delbridge, A. *The Pronunciation of English in Australia.* Rev. ed. Angus and Robertson, Sydney, 1965.

ENGL104 INTRODUCTION TO ENGLISH LANGUAGE STUDIES B

2 lectures, 2 tutorials per week
Assessment: 1 long essay, 2 tutorial papers, 2 class exercises

(i) The Development of English from the Middle English Period to the present day.

(ii) Introduction to Early English Language and Literature: a study of Chaucer's language and of selected *Canterbury Tales.*

TEXTBOOK

Cook, D. ed. *The Canterbury Tales of Geoffrey Chaucer.* Anchor, New York, 1961.

200-LEVEL

ENGL220 UTOPIAN AND ANTI-UTOPIAN LITERATURE

1 lecture, 1 tutorial per week
Assessment: 1 essay, 2 tutorial papers, 1 practical criticism exercise

A study of some literary portrayals of imaginary societies.

TEXTBOOKS

More, Thomas. *Utopia.* Penguin Books, 1965.
Johnson, Samuel. *Rasselas* in *Shorter Novels of the Eighteenth Century.* Vol.3. ed. Philip Henderson. J.M. Dent, London, 1962.
Swift, Jonathan. *Gulliver's Travels.* Penguin Books, 1975.
Morris, William. *News from Nowhere.* Routledge and Kegan Paul, 1970.
Butler, Samuel. *Erewhon.* Penguin Books, 1954.
Orwell, George. *Nineteen Eighty-Four.* Penguin Books, 1975.
Durrell, Lawrence. *The Dark Labyrinth.* Faber, 1969.
Golding, William. *Lord of the Flies.* Faber, 1958.
Frayn, Michael. *A Very Private Life.* Penguin Books, 1971.
Huxley, Aldous. *Brave New World.* Penguin Books, 1976.

RECOMMENDED READING

Plato. *The Republic.* Penguin Books, 1955.

ENGL221 ROMANTIC POETRY

1 lecture, 1 tutorial per week
Assessment: 1 essay, 1 tutorial paper, 2 practical criticism exercises

A study of the poetry of Blake, Wordsworth, Coleridge, Byron and Keats.

TEXTBOOKS

Blake, William. *Poems.* intro. and ed. J. Bronowski. Penguin, 1975.
Wordsworth, William. *Selected Poetry.* ed. Van Doren. Modern Library, New York, 1950.
Coleridge, S.T. *Selected Poetry.* ed. Stauffer. Modern Library, New York, 1951.
Keats, John. *Complete Poetry and Selected Prose.* ed. Briggs. Modern Library, New York, 1967.
Lord Byron. *Don Juan.* ed. Steffan, Steffan & Pratt. Penguin, 1973.
Lord Byron. *Poems.* Oxford Standard Authors. Oxford University Press, 1975.

RECOMMENDED READING

Lord Byron. *Selected Prose.* Penguin, 1972.

ENGL222 AUSTRALIAN LITERATURE

1 lecture, 1 tutorial per week
Assessment: 1 essay, 1 tutorial paper, 2 practical criticism exercises

A study of Australian Literature since 1920.

PRELIMINARY READING

Dutton, G. ed. *The Literature of Australia.* Penguin, 1976.

TEXTBOOKS

Slessor, K. *Poems.* Angus and Robertson, Sydney, 1976.
Hope, A.D. *Collected Poems 1930-1970.* Angus and Robertson, Sydney, 1975.
Wright, Judith. *Collected Poems 1942-1970.* Angus and Robertson, Sydney, 1975.
Craig, A. ed. *Twelve Poets 1950-1970.* Angus and Robertson, Sydney, 1975.
Boyd, Martin. *The Cardboard Crown.* Lansdowne Press, Melbourne, 1972.
Stead, Christina. *For Love Alone.* Angus and Robertson, Sydney, 1972.
White, Patrick. *The Aunt's Story.* Penguin, 1971.
Williamson, D. *Don's Party.* Currency Press, Sydney, 1975.
Williamson, D. *The Department.* Currency Press, Sydney, 1975.
Blair, R. *The Christian Brothers.* Currency Press, Sydney, 1977.
Hewett, D. *Bon-Bons and Roses for Dolly.* Currency Press, Sydney, 1976.

ENGL223 OLD ENGLISH

1 lecture, 1 tutorial per week
Assessment: 1 essay, 1 tutorial paper, 2 class exercises

An introduction to the language, literature and culture of the Anglo-Saxons and a study of Old English poetry and prose.

RECOMMENDED READING

Sherley-Price, L. trans. *Bede: A History of the English Church and People.* Penguin Classics, 1968.
Clark, J.W. *Early English.* Deutsch, 1957.
Ker, W.P. *The Dark Ages.* Blackwood, Edinburgh, 1923.
Mattingly, H. trans. *Tacitus: On Britain and Germany.* Penguin Books, 1951.

ENGL224 MIDDLE ENGLISH

1 lecture, 1 tutorial per week
Assessment: 1 essay, 1 tutorial paper, 2 class exercises

An introduction to the language and literature of England between the Norman Conquest and the Age of Chaucer to be followed by a study of the poetry, prose and drama of the later Middle English period.

RECOMMENDED READING

Clark, J.W. *Early English.* Deutsch, 1957.
Lewis, C.S. *The Allegory of Love.* Oxford University Press, 1951.
Wilson, R.M. *The Lost Literature of Mediaeval England.* 2nd ed. Methuen, 1970.

ENGL225 EIGHTEENTH CENTURY LITERATURE

1 lecture, 1 tutorial per week
Assessment: 1 essay, 2 tutorial papers, 1 practical criticism exercise

A study of English literature from Defoe to Jane Austen.

TEXTBOOKS

Defoe, Daniel. *Moll Flanders.* Signet, New York, 1964.
Richardson, Samuel. *Pamela.* 2 vols. Everyman Library, Dent, 1974.
Fielding, Henry. *Joseph Andrews and Shamela.* Everyman Library, Dent, 1973.
Smollett, Tobias. *Humphry Clinker.* Penguin Books, 1971.
Scott, Sir Walter. *Old Mortality.* Collins, London, 1963.
Henderson, Philip. ed. *Shorter Novels of the 18th Century.* Vol. 3. Everyman Library, Dent, 1961.
Peacock, Thomas L. *Novels.* Harcourt Brace, London, 1963.
Austen, Jane. *Northanger Abbey.* Penguin Books, 1972.
Brady, F. and Price. M. eds. *English Prose and Poetry: 1660-1800.* Holt, Rinehart and Winston, New York, 1961.

ENGL226 NINETEENTH CENTURY FICTION

1 lecture, 1 tutorial per week
Assessment: 1 essay, 2 tutorial papers, 1 practical criticism exercise

The course seeks to examine ways in which the novel developed as a literary form throughout the nineteenth century and how that development was affected by novelists' preoccupations with such issues as social class, the distribution of wealth, the changing role of women. Students will also be asked to study a twentieth century novel to serve as a basis of comparison with other works on the course.

TEXTBOOKS

Austen, Jane. *Emma.* Penguin, Harmondsworth, 1972.
Bronte, Charlotte. *Jane Eyre.* Penguin, Harmondsworth, 1976.
Thackeray, W.M. *Vanity Fair.* Penguin, Harmondsworth, 1975.
Dickens, Charles. *Dombey and Son.* Penguin, Harmondsworth, 1976.
Dickens, Charles. *Great Expectations.* Penguin, Harmondsworth, 1976.
Eliot, George. *Middlemarch.* Penguin, Harmondsworth, 1976.
Meredith, George. *The Egoist.* O.U.P., London, 1961.
Hardy, Thomas. *Tess of the D'Urbervilles.* Macmillan, 1960.
Fowles, John. *The French Lieutenant's Woman.* Panther, St. Albans, 1973.

300-LEVEL

ENGL312 SHAKESPEARE AND HIS CONTEMPORARIES

1 lecture, 1 tutorial per week
Assessment: 1 essay, 1 tutorial paper, 2 practical criticism exercises

A study of selected plays of Shakespeare, Marlowe, Jonson and Webster.

TEXTBOOKS

Shakespeare, William. *Love's Labour's Lost, Richard III, Macbeth, King Lear, Coriolanus, The Winter's Tale* in *Shakespeare's Collected Works.* ed. Alexander, Collins, 1951.
Marlowe, Christopher. *The Complete Plays.* Penguin Books, 1969.
Jonson, Ben. *Three Comedies.* Penguin Books, 1966.
Webster, John. *Three Plays.* Penguin Books, 1966.

ENGL313 RESTORATION AND AUGUSTAN LITERATURE

1 lecture, 1 tutorial per week
Assessment: 1 essay, 1 tutorial paper, 2 practical criticism exercises

A study of English Literature from Dryden to Johnson.

TEXTBOOKS

Goss, Sir E. ed. *Restoration Plays.* Everyman Library, Dent, 1964.
Miner, E. ed. *Selected Poetry and Prose of John Dryden.* Modern Library, New York, 1969.
Swift, Jonathan. *Gulliver's Travels.* Penguin, 1975.
Butt, J. ed. *The Poems of Alexander Pope.* Twickenham one-vol. edn. Methuen, 1965.
Johnson, Samuel. *Rasselas, Poems and Selected Prose.* Bronson ed. Holt, Rinehart and Winston, 1971.

ENGL314 AUSTRALIAN FICTION TO 1920

1 lecture, 1 tutorial per week
Assessment: 1 essay, 2 tutorial papers, 1 practical criticism exercise

A study of Australian fiction up to 1920.

PRELIMINARY READING

Ward, R. *The Australian Legend.* O.U.P., Melbourne, 1958.
Dutton, G. ed. *The Literature of Australia.* Penguin, 1976.

TEXTBOOKS

Kingsley, H. *The Hillyars and the Burtons.* Sydney University Press, Sydney, 1973.
Clarke, M. *For the Term of His Natural Life.* Angus and Robertson, Sydney, 1975.
Lawson, Henry. *Selected Stories.* ed. Matthews. Rigby, Adelaide, 1971.
Furphy, Joseph. (pseudonym T. Collins) *Such is Life.* Angus and Robertson, Sydney, 1972.
Furphy, Joseph. *Rigby's Romance.* Rigby, Adelaide, 1971.
Richardson, H.H. *The Fortunes of Richard Mahony.* Penguin Books, 1975.

ENGL314 AUSTRALIAN FICTION TO 1920 (CONT'D)

RECOMMENDED READING

Palmer, V. *The Legend of the Nineties.* M.U.P., 1963.
Green, D. *Ulysses Bound.* A.N.U., Canberra, 1973.
Franklin, M. *Joseph Furphy.* Angus & Robertson, Sydney, 1944.
Matthews, B. *The Receding Wave.* M.U.P., 1972.

ENGL315 THE METAPHYSICAL POETS AND MILTON

1 lecture, 1 tutorial, 1 seminar per week
Assessment: 1 essay, 1 tutorial paper, 2 practical criticism exercises

A study of the poetry of Milton and selected metaphysical poets of the seventeenth century.

TEXTBOOKS

Frye, N. ed. *Paradise Lost and Selected Poetry and Prose of John Milton.* Holt, Rinehart & Winston, New York, 1951.
Gardner, H. ed. *Metaphysical Poets.* Penguin Books, 1975.
Marvell, A. *Complete Poems.* Penguin Books, 1972.

ENGL316 ADVANCED OLD ENGLISH

1 lecture, 1 tutorial per week
Assessment: 1 essay, 1 tutorial paper, 2 class exercises

A detailed study of some of the more difficult texts in Old English poetry and prose.

RECOMMENDED READING

Bethurum, D. *The Homilies of Wulfstan.* Clarendon Press, Oxford, 1957.
Van Kirk Dobbie, E. and Krapp, G. eds. *The Anglo-Saxon Poetic Records.* Vols. III and IV. Columbia University Press, New York, 1931-1953.

ENGL317 MEDIAEVAL ROMANCE IN ENGLAND

1 lecture, 1 tutorial per week
Assessment: 1 essay, 1 tutorial paper, 2 class exercises

A detailed study in the original language of the romance genre in Mediaeval English literature.

TEXTBOOKS

Brewer, D. ed. *Morte D'Arthur.* Northwestern University Press, Evanston, 1968.
Sands, D.B. ed. *Middle English Verse Romances.* Holt, Rinehart & Winston, New York, 1966.
Tolkien, J.R.R. and Gordon, E.V. ed. *Sir Gawain and the Green Knight.* 2nd ed. Oxford University Press, 1967.

ENGL318 OLD AND MIDDLE ENGLISH LYRIC

1 lecture, 1 tutorial per week
Assessment: 1 essay, 1 tutorial paper, 2 class exercises

A study of the origins and nature of Old and Middle English lyrics.

TEXTBOOKS

Davies, R.T. ed. *Mediaeval English Lyrics, A Critical Anthology.* Faber, 1963.
Hamer, D. ed. *A Choice of Anglo-Saxon Verse.* Faber, 1970.

ENGL319 MEDIAEVAL DRAMA IN ENGLAND

1 lecture, 1 tutorial per week
Assessment: 1 essay, 1 tutorial paper, 2 class exercises

A study of drama in England from the earliest times up to the early-Tudor period.

TEXTBOOK

Adams, J.Q. ed. *Chief Pre-Shakespearian Dramas.* Riverside Press, Cambridge, Mass., 1924.

400-LEVEL

ENGL400 ENGLISH IV HONOURS

Assessment: Class exercises, seminar papers, long essays and/or examinations, and by a thesis of not more than 10,000 words

First Session

CRITICAL THEORY AND PRACTICE. A study of the relationship between the theory and practice of criticism beginning with Plato and Aristotle.

(1) Classical, Romantic and Modern.

TEXTBOOKS

Classical Literary Criticism. tr. Dorsch, Penguin Books, 1965.

Students will study selections from Sidney, Pope, Wordsworth, Keats, Emerson, Whitman, Yeats, Pound and Eliot.

or

(2) Classical and Mediaeval.

TEXTBOOKS

Classical Literary Criticism. tr. Dorsch, Penguin Books, 1965.

Students will study selections from Plato, Aristotle, Horace, Longinus, Quintilian, Pseudo-Cicero, Bede and Geffroi de Vinsauf.

ELIZABETHAN DRAMA. A study of the dramatic literature of the second half of the sixteenth century.

TEXTBOOKS

Armstrong. ed. *Elizabethan History Plays.* The World's Classics, Oxford University Press, 1965.
Marlowe, C. *The Complete Plays.* Penguin Books, 1969.
McIlwraith. ed. *Five Elizabethan Tragedies.* The World's Classics, Oxford University Press, 1971.
McIlwraith. ed. *Five Elizabethan Comedies.* The World's Classics, Oxford University Press, 1973.
Shakespeare, W. *Comedy of Errors, Midsummer Night's Dream, Much Ado About Nothing, As You Like It, Troilus and Cressida, Measure for Measure* in *Shakespeare's Collected Works.* ed. Alexander, Collins, 1974.
Tudor Interludes. Penguin Books, 1972.

RENAISSANCE POETRY. A study of the poetry of the sixteenth century from Wyatt to Shakespeare.

TEXTBOOKS

Daalder, J. ed. *Sir Thomas Wyatt Collected Poems.* Oxford Unviersity Press, 1975.
Kimbrough R. ed. *Philip Sidney, Selected Prose and Poetry.* Holt, Rinehart & Winston, New York, 1969.
Smith, J.C. & de Selincourt, E. eds. *The Poetical Works of Edmund Spenser.* Oxford University Press, 1961.
Shakespeare's Sonnets. New Cambridge ed., Cambridge University Press, Cambridge, 1969.
Chambers, E.K. ed. *The Oxford Book of Sixteenth-Century Verse.* Oxford University Press, 1970.

(A) BEOWULF AND RELATED HEROIC POETRY. A study of Old English heroic poetry.

TEXTBOOK

Klaeber, Fr. ed. *Beowulf and the Fight at Finnsburg.* 3rd ed. Heath, New York, 1950.

(A) FOURTEENTH CENTURY LITERATURE. Students will study the works of Chaucer and selections from Langland, Gower and the Gawain poet.

Second Session

CRITICAL THEORY AND PRACTICE. Romantic and Modern.

TEXTBOOKS

As for first session.

or

THE HISTORY OF PHILOLOGY. A study of Linguistic Theory and Method from classical, through mediaeval times, up to the present day.

Students will study a selection from Plato, Aristotle, Quintilian, Mediaeval Christian Philosophers, Eighteenth Century Linguists, Nineteenth Century Comparative Philologists and the Twentieth Century Linguists.

JACOBEAN DRAMA. Selected plays by Jonson, Chapman, Marston, Tourneur, Webster, Middleton, Beaumont and Fletcher, Massinger.

ENGL400 ENGLISH IV HONOURS (CONT'D)

RENAISSANCE PASTORAL

Students will study the concept of Renaissance Pastoral as it is expressed in prose romance, poetry and plays of the period. They will be asked to study selected works by John Lyly, Robert Greene, George Peele, William Shakespeare, Philip Sidney, Edmund Spenser, John Milton, Andrew Marvell.

RECOMMENDED READING

Empson, W. *Some Versions of Pastoral.* Chatto and Windus, London, 1968.
Giammatti, A. Bartlett. *The Earthly Paradise and the Renaissance Epic.* Princeton, 1966.
Greg, W.W. *Pastoral Poetry and Pastoral Drama.* New York, 1959.
Jones, W.P. *The Pastourelle.* Octagon Books, New York, 1931.
Levin, H. *The Myth of the Golden Age in the Renaissance.* Faber, 1970.
Marinelli, P.V. *Pastoral.* London, 1971.

LITERARY SCHOLARSHIP. An introduction to Paleography, with special reference to Early Tudor textual problems.

(B) FOURTEENTH CENTURY LITERATURE. As for First Session.

(B) BEOWULF AND RELATED HEROIC POETRY. As for First Session.

EUROPEAN LANGUAGES

SCHEDULE ENTRIES

Refer to Schedule A for approved details of the subjects described in this section.

FRENCH

100-LEVEL

EURO103 INTRODUCTORY FRENCH

Assessment: Regular exercises in aural comprehension, spoken and written expression.

This is an audio-visual course for beginners or near-beginners in French. Initially there is concentration exclusively on hearing and speaking, with the gradual introduction of written expression. Classes will be in tutorial groups of about 15 students and extensive use will be made of the language laboratory. Successful completion of Introductory French qualifies students for entry into French IIC.

TEXTBOOKS

Camus, A. *L'Etranger.* Folio no. 2. Gallimard, Paris.
Moget, M.T. *De Vive Voix* (Livre de l'élève). Didier, Paris, 1975. (2 vols.)
Mansion, J.E. ed. *Harrap's Shorter French and English Dictionary.* Harrap, London. (2 vols. - may also be purchased in 1 vol.)
Pimsleur, P. *C'est la vie.* Harcourt, Brace & Jovanovich, New York, 1976.
Whitmarsh, W.F.H. *Complete French Course.* Longmans, London, 1971.

EURO111 FRENCH IA

Recommended Pre-requisites: Prior French study to an acceptable level: normally this would mean a standard equivalent to French 2 unit or Level 2 at N.S.W. H.S.C.
Assessment:
(a) *Language:* regular assignments in written and oral expression and in aural comprehension;
(b) *Civilization:* essays during session.

This subject consists of 2 parts: (a) French IA language and (b) French IA civilization.

(a) FRENCH IA LANGUAGE:

In this course the principal emphasis is on the improvement of aural comprehension of normal French conversation and the ability to express relatively simple ideas in grammatically correct French. Major grammatical points are treated as they occur, and regular attention is given to accurate discrimination and reproduction of French sounds and sound patterns.

TEXTBOOKS

Helbling, R. & Barnett, A. *L'Actualité Française.* Holt, Rinehart & Winston, New York, 1967.
Helbling, R. & Barnett, A. *Interviews pour l'Actualité Française.* Holt, Rinehart & Winston, New York, 1967.
Mansion, J.E. ed. *Harrap's Shorter French and English Dictionary.* Harrap, London. (2 volumes - may be purchased in 1 vol.)
Micro-Robert. Société du Nouveau Littré. Paris.
Whitmarsh, W.F.H. *Complete French Course.* Longmans, London, 1971.

(b) FRENCH IA CIVILIZATION:

This is a study of various political, literary, artistic and social aspects of 20th century France. Representative literary texts are chosen to illustrate the development of both literary and social trends.

TEXTBOOKS

Gide, A. *L'Immoraliste.* Folio no. 229. Gallimard, Paris.
Perec, G. *Les Choses.* No. 259. J'ai lu, Paris.
Robbe-Grillet, A. *La Jalousie.* Methuen, London, 1969 (Methuen's 20th century texts).
Sartre, J.P. *Huis clos* suivi de *Les Mouches.* Folio no. 807. Gallimard, Paris.

EURO112 FRENCH IB

Assessment:
(a) *Language:* regular assignments in written and oral expression and in aural comprehension;
(b) *Literature:* essays during session.

This subject consists of 2 parts: (a) French IB language and (b) French IB literature.

EURO112 FRENCH IB (CONT'D)

(a) FRENCH IB LANGUAGE:

The programme of aural comprehension begun in French IA is sustained, but with regular opportunity provided for the expression of ideas in small groups on subjects of interest chosen by the student. The particular theme chosen by each student is also used as a basis for the written expression required during the session.

TEXTBOOKS

As for French IA, *plus*
Reportage France. BBC Publications, 1973.

(b) FRENCH IB LITERATURE:

Through a selection of 20th century French plays students are introduced to techniques of literary analysis.

TEXTBOOKS

Anouilh, J. *Antigone.* Didier, Paris, "Les Classiques de la civilisation française".
Beckett, S. *En attendant Godot.* Harrap, London, 1966.
Ionesco, I. *Three Plays.* Heinemann, London, 1966.
Montherlant, H. de. *Le Maître de Santiago.* Folio no. 142. Gallimard, Paris.

200-LEVEL

EURO201 FRENCH IIC

Assessment:
(a) *Language:* regular exercises in written and oral expression and in aural comprehension. There will be an oral examination at the end of session;
(b) *Literature:* essays during session.

This subject consists of 2 parts: (a) French IIC language and (b) French IIC literature.

(a) FRENCH IIC LANGUAGE:

Written expression, reading, comprehension and formal grammar are emphasised. The skills in aural comprehension and spoken expression acquired in French 103 are further developed in tutorial groups and language laboratory sessions.

TEXTBOOKS

Mansion, J.E. ed. *Harrap's Shorter French and English Dictionary.* Harrap, London. (2 vols. - may be purchased in 1 vol.)
Micro-Robert. Société du Nouveau Littré, Paris.
Nemni, M. and Quillard, G. *Les Ensembles.* Prentice-Hall, Canada, 1976.
Whitmarsh, W.F.H. *Complete French Course.* Longmans, London, 1971.

(b) FRENCH IIC LITERATURE:

This course involves the literary and linguistic study of several 20th century works.

TEXTBOOKS

Anouilh, J. *Becket.* Harrap, London, 1962.
Gide, A. *La Porte étroite.* Folio no. 210. Gallimard, Paris.
Mauriac, F. *Le Noeud de Vipères.* Livre de poche, no. 251, Paris.
Sartre, J.P. *Huis clos* suivi de *Les Mouches.* Folio no. 807. Gallimard, Paris.

EURO202 FRENCH IID

Assessment:
(a) *Language:* regular assignments in written and oral expression and in aural comprehension. There will also be an oral examination at the end of session;
(b) *Civilization:* essays during session.

This subject consists of 2 parts: (a) French IID language and (b) French IID civilization.

(a) FRENCH IID LANGUAGE:

Through the analysis of written and recorded documents, different patterns of French usage are explored. Continuing stress is also placed on accurate written and spoken expression and reading comprehension.

TEXTBOOK

Benamou, M. & Carduner, J. *Le Moulin à paroles.* Hachette, Paris, 1972.

EURO202 FRENCH IID (CONT'D)

(b) FRENCH IID CIVILIZATION

An Introduction to 17th century France.

TEXTBOOKS

Corneille, P. *Le Cid.* Univers des Lettres no. 223. Bordas, Paris.
Lafayette, Mme de. *La Princesse de Clèves.* Folio no. 778. Gallimard, Paris.
Molière. *Tartuffe.* Univers des Lettres no. 211. Bordas, Paris.
Racine, J. *Andromaque.* Univers des Lettres no. 215. Bordas, Paris.

RECOMMENDED READING

Lough, J. *An Introduction to 17th century France.* Longmans, London, 1970.

EURO211 FRENCH IIA

Assessment:
(a) *Language:* regular assignments in written and oral expression and in aural comprehension. There will also be an oral examination at the end of session;
(b) *Literature:* essays during session.

This subject consists of 2 parts: (a) French IIA language and (b) French IIA literature.

(a) FRENCH IIA LANGUAGE

This course consists of a programme of aural comprehension in the language laboratory; practice in spoken French in conversation groups; written expression in the form of extension of ideas presented in short extracts; and a small amount of more formal grammar and translation work.

TEXTBOOKS

Benamou, M. & Carduner, J. *Le Moulin à paroles.* Hachette, Paris, 1972.
Mansion, J.E. ed. *Harrap's Shorter French and English Dictionary.* Harrap, London. (2 vols. - may also be purchased in 1 vol.)
Micro-Robert. Société du nouveau Littré, Paris.

(b) FRENCH IIA LITERATURE

The novel in 19th century France.

TEXTBOOKS

Balzac, H. de. *Le Père Goriot.* Folio no. 8. Gallimard, Paris.
Flaubert, G. *Madame Bovary.* Folio no. 51. Gallimard, Paris.
Stendhal. *Le Rouge et le noir.* Folio no. 17. Gallimard, Paris.
Zola, E. *Germinal.* (Garnier-Flammarion poche no. 191) Garnier, Paris.

EURO212 FRENCH IIB

Assessment:
(a) *Language:* regular assignments in written and oral expression and in aural comprehension. There will also be an oral examination at the end of session.
(b) *Civilization:* essays during session.

This subject consists of 2 parts: (a) French IIB language and (b) French IIB civilization.

(a) FRENCH IIB LANGUAGE

This course consists of a programme of aural comprehension in the language laboratory; practice in spoken French in conversation groups; written expression in the form of extension of ideas presented in short extracts; and a small amount of more formal grammar and translation work.

TEXTBOOKS

Benamou, M. & Carduner, J. *Le Moulin à paroles.* Hachette, Paris, 1972.
Mansion, J.E. ed. *Harrap's Shorter French and English Dictionary.* Harrap, London.
Micro-Robert. Société du nouveau Littré, Paris.

(b) FRENCH IIB CIVILIZATION

An Introduction to 17th century France.

TEXTBOOKS

Corneille, P. *Le Cid.* Univers des Lettres no. 223. Bordas, Paris.
Lafayette, Mme de. *La Princesse de Clèves.* Folio no. 778. Gallimard, Paris.
Molière. *Tartuffe.* Univers des Lettres no. 211. Bordas, Paris.
Racine, J. *Andromaque.* Univers des Lettres no. 215. Bordas, Paris.

EURO212 FRENCH IIB (CONT'D)

RECOMMENDED READING

Lough, J. *An Introduction to 17th century France.* Longmans, London, 1970.

300-LEVEL

EURO311 FRENCH IIIA

Assessment:
(a) *Language:* regular exercises in aural comprehension, oral expression and stylistic analysis. There will be an oral examination at the end of session;
(b) *Literature:* essays during session.

This subject consists of 2 parts: (a) French IIIA language and (b) French IIIA literature.

(a) FRENCH IIIA LANGUAGE

This course involves detailed stylistic analysis of written documents covering different registers of language and different literary periods. Programmes of aural comprehension in the language laboratory and conversation groups will be conducted throughout the session.

TEXTBOOKS

Bailly, R. *Dictionnaire des synonymes.* Larousse, Paris.
Wagner, R.L. & Pinchon, J. *Grammaire du français.* Hachette, Paris, 1962.

(b) FRENCH IIIA LITERATURE

French poetry 1850-1950.

TEXTBOOKS

Broome, P. & Chesters, G. eds. *An Anthology of Modern French Poetry (1850-1950).* Cambridge U.P., Cambridge, 1976.
Broome, P. & Chesters, G. *The Appreciation of Modern French Poetry (1850-1950).* Cambridge U.P., Cambridge, 1976.

EURO312 FRENCH IIIB

Assessment:
(a) *Language:* regular exercises in aural comprehension, oral expression and translation. There will be an oral examination at the end of session.
(b) *Civilization:* essays during session.

This subject consists of 2 parts: (a) French IIIB language and (b) French IIIB civilization.

(a) FRENCH IIIB LANGUAGE

This course will examine techniques of precise translation from English to French. It further develops skills of written expression and reading comprehension, and provides regular sessions of aural comprehension in the language laboratory and conversation in small groups.

TEXTBOOKS

Bailly, R. *Dictionnaire des synonymes.* Larousse, Paris.
Mansion, J.E. ed. *Harrap's Standard French and English Dictionary.* Harrap, London.
Wagner, R.L. & Pinchon, J. *Grammaire du français.* Hachette, Paris, 1962.

(b) FRENCH IIIB CIVILIZATION

France in the Classical Era.

TEXTBOOKS

Corneille, P. *Le Cid.* Univers des Lettres no. 223. Bordas, Paris.
Corneille, P. *Polyeucte.* Univers des Lettres no. 217. Bordas, Paris.
Lafayette, Mme de. *La Princesse de Clèves.* Folio no. 778. Gallimard, Paris.
La Rochefoucauld. *Maximes et réflexions diverses.* Folio no. 728. Gallimard, Paris.
Molière. *Tartuffe.* Univers des Lettres no. 211. Bordas, Paris.
Molière. *L'Ecole des femmes.* Univers des Lettres no. 221. Bordas, Paris.
Racine, J. *Andromaque.* Univers des Lettres no. 215. Bordas, Paris.
Racine, J. *Phèdre.* Univers des Lettres no. 227. Bordas, Paris.

RECOMMENDED READING

As for EURO202.

400-LEVEL

EURO400 FRENCH IV HONOURS

(a) APPROACHES TO LITERARY CRITICISM

A survey of literary criticism in France with particular emphasis on critical method since 1945. Assessment is by seminar papers and essays.

TEXTBOOKS

Doubrovsky, S. *Pourquoi la nouvelle critique.* Mercure de France, 1972.
Moreau, P. *La critique littéraire en France.* Colin, Paris, 1960.
Poulet, G. *Les Chemins actuels de la critique.* Plon, Paris, 1967.

(b) SUPPLEMENTARY STUDY

To be chosen in consultation with the Departmental Chairman.

(c) SPECIAL SUBJECT

A detailed study on a topic of French literature, civilization or language to be chosen in consultation with the Departmental Chairman. An essay of about 10,000 words in French is required.

(d) PHONETICS

An examination of the sounds of French, the principles governing their articulation and operation when combined in words and sentences.

Assessment will be based on regular transcription and dictation exercises and a written examination.

TEXTBOOK

Léon, P.R. *Prononciation du français standard.* Didier, Paris, 1966.

(e) OLD FRENCH

A study of aspects of the semantic and morphological evolution of the French language from Latin to the sixteen century through an examination of Old French documents, followed by the study of a major work of Old French literature.

Assessment will be based on regular written assignments.

TEXTBOOKS

Ewert, A. *The French language.* Faber, London.
Grandsaignes d'Hauterive, R. *Dictionnaire d'ancien français.* Larousse, Paris.
La Chanson de Roland. Collection Classique français du moyen-âge. Champion, Paris.
Raymaud de Lage, G. *Introduction à l'ancien français.* Société d'édition d'enseignement supérieur, Paris.

(f) TRANSLATION

Development of skill in the precise rendition of English expression into French, and French to English will be developed through regular exercises in translation. Assessment will be based on these exercises.

TEXTBOOKS

Grevisse, M. *Le Bon Usage.* Hatier, Paris.
Hanse, J. *Dictionnaire des difficultés de la langue française.* Baude, Paris.
Mansion, E. ed. *Harrap's Standard French and English Dictionary.* Harrap, London.
Petit-Robert. Société du Nouveau Littré, Paris, 1972.

(g) STYLISTICS

Through the analysis of a selection of written documents, students will be required to demonstrate their awareness of techniques employed by writers (especially at the levels of syntax and vocabulary) for the effective communication of their ideas.

This work will be complemented by the phonostylistic analysis of a series of recorded documents.

Assessment will be by regular written assignments and a final examination.

TEXTBOOKS

Cressot, M. *Le Style et ses techniques.* P.U.F., Paris, 1947.
Guiraud, P. & Kuentz, P. *Initiation à la linguistique: la stylistique.* Klincksieck, Paris.
Rigault, A. dir. *La grammaire du français parlé.* Hachette, Paris, 1971.
Sauvageot, A. *Analyse du français parlé.* Hachette, Paris, 1972.

EURO400 FRENCH IV HONOURS (CONT'D)

(h) CONVERSATION

There will be weekly classes for conversation with a native French speaker.

ITALIAN

100-LEVEL

EURO153 INTRODUCTORY ITALIAN

Assessment: Regular exercises in aural-oral comprehension and reading and writing.

This is an audio-lingual course for beginners or near beginners in Italian. The emphasis is initially on oral communication with a gradual development of competence in all four aspects of second-language acquisition: listening, speaking, reading and writing. Classes will be in tutorial groups of no more than 20 students and extensive use will be made of the language laboratory. Successful completion of EURO153 qualifies students for entry into EURO251 Italian IIC.

TEXTBOOKS

Brigola, Alfredo L. *Practicing Italian.* (Revised). An Exercise Manual for Basic Italian. 3rd ed. Holt, Rinehart and Winston, Inc., New York, 1972.
Speroni, Charles and Golino, Carlo L. *Basic Italian.* 3rd ed. Holt, Rinehart and Winston, Inc., New York, 1972.
Speroni, Charles and Golino, Carlo L. *Panorama italiano.* 3rd ed. Holt, Rinehart and Winston, Inc., New York, 1974.

EURO161 ITALIAN IA

Recommended Pre-requisite: Prior Italian study to an acceptable level: normally this would mean satisfactory performance in Italian at the N.S.W. H.S.C. or proficiency attained from another source such as attending school in Italy.
Assessment:
(a) *Language:* periodic assessments in aural-oral comprehension, reading comprehension, writing and composition;
(b) *Literature:* periodic comprehension achievement assessments and essays during session.

This subject consists of 2 parts: (a) Italian IA language and (b) Italian IA literature.

(a) ITALIAN IA LANGUAGE

In this course the principal emphasis is on the improvement of aural-oral comprehension of standard Italian, on fluency for oral communication and on stylistic analysis and development for reading comprehension and for written communication and composition. Italian phonemics and phonetics are reviewed. Major attention is given to lexical development and the analysis of language structure and its use.

TEXTBOOKS

Balducci, Gioacchino. *Italia moderna.* Holt, Rinehart and Winston, New York, 1973.
Hazon, Mario. *Grande dizionario Garzanti inglese-italiano italiano-inglese.* (Softbound school edition). Garzanti, Milano, 1974.
Rapaccini, Luisa. *Parlo italiano.* Le Monnier, Firenze, 1976. (Or latest edn.)

RECOMMENDED READING

Castiglione, Pierina Borrani. *Italian Phonetics, Diction and Intonation.* S.F. Vanni, New York, 1957.
Satta, Luciano. *Come si dice: uso e abuso della lingua italiana.* Sansoni, Firenze, 1974.

(b) ITALIAN IA LITERATURE

The Italian Theatre of the Twentieth Century: through a selection of 20th Century Italian plays students are introduced to stylistics, techniques of literary analysis and an overview of modern Italian life as seen by a selection of Italian playwrights.

TEXTBOOKS

Betti, Ugo. *Corruzione al palazzo di giustizia.* Cappelli, 1966.
De Filippo, Eduardo. *Filumena Marturano.* Einaudi, 1971.
Fo, Dario. *Morte accidentale di un anarchico.* Einaudi, 1974.
Pirandello, Luigi. *Cosi è (se vi pare).* Gli Oscar, Mondadori, 1967.
Pullini, Giorgio. *Teatro italiano del 900.* Cappelli.

EURO161 ITALIAN IA (CONT'D)

RECOMMENDED READING

D'Amico, Silvio. *Storia del teatro.* Garzanti, 1970.
Pullini, Giorgio. *Teatro contemporaneo in Italia.* Sansoni, 1974.
Torresani, S. *Il teatro italiano negli ultimi vent'anni.* 1946-1965.

EURO162 ITALIAN IB

Assessment:
(a) *Language:* periodic assessments in aural-oral comprehension, reading comprehension, writing and composition;
(b) *Civilization:* periodic comprehension acheivement assessments and essays during session.

This subject consists of 2 parts: (a) Italian IB language and (b) Italian IB civilization.

(a) ITALIAN IB LANGUAGE

The programme begun in Italian IA is sustained with regular opportunity provided for the expression of ideas on subjects of interest presented by the various texts or chosen by the student. These themes are also used as a basis for the written expression required during the session.

TEXTBOOKS

As for Italian IA.

RECOMMENDED READING

As for Italian IA.

(b) ITALIAN IB CIVILIZATION

Modern Italy: this is the study of the socio-economic, political and cultural development of the Italian people since their unification as a modern state in 1860.

TEXTBOOKS

Piovene, Guido. *Viaggio in Italia.* Mondadori, Milano, 1971.
Tacchi, A. *Panorami italiani: compendio di vita, cultura e civilta.*

RECOMMENDED READING

Montanelli, Idro. *Storia d'Italia.* Rizzoli, Biblioteca Universale, Milano, 1976.
Olivieri-Sarasso. *Il Novecento italiano.* Torino, 1972.
Prezzolini, Giuseppe. *L'Italia finisce, ecco quel che resta.* Vallecchi, Firenze, 1958.

200-LEVEL

EURO251 ITALIAN IIC

Assessment:
(a) *Language:* periodic assessments in aural-oral comprehension, reading comprehension, writing and composition; there will be an oral and written examination at the end of the session;
(b) *Literature:* periodic comprehension achievement assessments and essays during session.

This subject consists of 2 parts: (a) Italian IIC language and (b) Italian IIC literature.

(a) ITALIAN IIC LANGUAGE

In this course the principal emphasis is on the improvement of aural-oral comprehension of standard Italian, on fluency for oral communication and on stylistic analysis and development for reading comprehension and for written communication and composition. Italian phonemics and phonetics are reviewed. Major attention is given to lexical development and the analysis of language structure and its use.

TEXTBOOKS

Balducci, Gioacchino. *Italia moderna.* Holt, Rinehart and Winston, New York, 1973.
Hazon, Mario. *Grande dizionario Garzanti inglese-italiano italiano-inglese.* (Softbound school edition). Garzanti, Milano, 1974.
Pacifici, Sergio. *Italia: Vita e cultura.* Random House, New York, 1970.
Rapaccini, Luisa. *Parlo italiano.* Le Monnier, Firenze, 1976.

RECOMMENDED READING

Castiglione, Pierina Borrani. *Italian Phonetics, Diction and Intonation.* S.F. Vanni, New York, 1957.
Satta, Luciano. *Come si dice: uso e abuso della lingua italiana.* Firenze, Sansoni, 1974.

EURO251 ITALIAN IIC (CONT'D)

(b) ITALIAN IIC LITERATURE

Through a selection of 19th and 20th Century Italian prose selections and novels students are introduced to Italian prose stylistics, techniques of literary analysis and an overview of modern Italian life as seen by a selection of Italian narrators.

TEXTBOOKS

Pellegrinetti, G.A. *Un secolo di prosa.* Petrini, Torino, 1964.
And *two* of the following novels:
D'Annunzio, Gabriele. *Il piacere.* Mondadori, Gli Oscar, Milano, 1965.
Moravia, Alberto. *La ciociara.* Bompiani, Milano, 1974.
Pirandello, Luigi. *Il fu Mattia Pascal.* Mondadori, Gli Oscar, Milano, 1965.
Verga, Giovanni. *I Malavoglia.* Mondadori, Gli Oscar, Milano, 1965.

RECOMMENDED READING

Devoto, Giacomo. *Itinerario stilistico.* LeMonnier, Firenze, 1975.
Gatti. *Gabriele d'Annunzio: Studi e saggi.*
Munafò. *Conoscere Pirandello.*
Sanguineti. *Alberto Moravia.* Mursia, 1970.
Santoro, M. *Dal romanzo storico al romanzo decadente.* Napoli, 1970.
Scaramucci. *Introducione a Verga.*

EURO252 ITALIAN IID

Assessment:
(a) *Language:* periodic assessments in aural-oral comprehension, reading comprehension, writing and composition;
(b) *Civilization:* periodic comprehension achievement assessments and essays during session.

This subject consists of 2 parts: (a) Italian IID language and (b) Italian IID civilization.

(a) ITALIAN IID LANGUAGE

The programme begun in Italian IIC is sustained with regular opportunity provided for the expression of ideas on subjects of interest presented by the various texts or chosen by the student. These themes are also used as a basis for the written expression required during the session.

TEXTBOOKS

As for Italian IIC.

RECOMMENDED READING

As for Italian IIC.

(b) ITALIAN IID CIVILIZATION

This course is a study of Italian opera from its beginnings with Peri and Monteverdi to the genre as we know it today. The main composers will be studied with emphasis on a complete analysis of the libretto as a literary form.

TEXTBOOKS

The texts will be a selection of the following opera librettos:

Monteverdi. *Orfeo ed Euridice.*
Metastasio. *Attilio Regolo.*
Bellini. *La Sonnambula.*
Donizetti. *Lucia di Lammemoor.*
Verdi. *La Traviata; Il Trovatore; Rigoletto; Otello.*
Mascagni. *Cavalleria Rusticana.*
Puccini. *Tosca; La Boheme; Madama Butterfly.*

RECOMMENDED READING

Baldacci, Luigi. *Libretti d'opera e altri saggi.* Firenze, 1974.

GENERAL STUDIES

General Studies exists to enrich the curriculum of the University in two main ways: (1) by broadening the student's range of study through the provision of areas of interest beyond his necessarily specialized professional course and (2) by attempting to exploit the interrelation between disciplines which (in the modern university) are generally studied as quite distinct subjects or courses, and to link such disciplines in relevant and fruitful ways.

1. NEW GENERAL STUDIES SUBJECTS

The subjects have no pre-requisite (other than a minimum of credit points for 200-level subjects) and are intended to be available to any student in the University.

SCHEDULE ENTRIES

Refer to Schedule A for approved details of the subjects described in this section.

100-LEVEL

GENE102 INDUSTRIAL RELATIONS A: WAGE DETERMINATION IN AUSTRALIA

Lectures 2; Seminar/Tutorial 1
Assessment: Will be based on essays and tutorial/seminar exercises (a total of approx. 3000 words) and one 2-hour examination.

The objective of the course is to examine some of the institutional arrangements and other factors which influence wages determination in Australia. Special emphasis is placed on the development of the Arbitration System and the effects this has had on trade unions, employer groups and wages. Topics to be studied include the industrial situation before Arbitration, reasons for the adoption of an Arbitration system, an examination of alternatives to Arbitration (Wages Boards and Collective Bargaining), the mechanics of award making, differences between Commonwealth and State tribunals, Basic Wage, Margins, Productivity and Wages, Wages share in national income, Wages and Price Adjustment, Wages Drift, Market influences on wages, social factors influencing wage differentials, Total Wage, Minimum Wage and Wage Indexation.

TEXTBOOK

Issac & Niland, eds. *Australian Labour Economics Readings.* Sun Books, Melbourne, 1975.

RECOMMENDED READING

Dept. of Labour. *Labour's Share of the National Product - The Post War Australian Experience.* Canberra, 1975.
Issac, J. *Wages and Productivity.* Cheshire, Melbourne, 1967.
Issac & Ford. *Australian Labour Relations Readings.* Sun Books, Melbourne, 1966.
Martin, R.M. *Trade Unions in Australia.* Penguin, Harmondsworth, 1975.
Portus, J.H. *Australian Compulsory Arbitration 1900-70.* W.E.A. Monographs, 1971.
Riach & Howard. *Productivity Agreements and Australian Wage Determination.* Wiley, Sydney, 1973.

200-LEVEL

GENE203 THE WORLD OF LANGUAGE A

Lectures 2; Tutorial/Demonstration 1
Assessment: Will be based on 3 class tests, and assignments mainly in the form of short answers to specific questions in textbook

An investigation of the nature and uses of Language, especially as it touches life and learning at so many points. At such points of contact the interdisciplinary aspects of the course will be developed.

Part A will serve as a general introduction and then deal specifically with the phonological and semantic aspects.

TEXTBOOKS

Bolinger, D. *Aspects of Language.* 2nd ed. Harcourt, Brace & Jovanovich, N.Y., 1975.
Stork, F.C. & Widdowson, J.D.A. *Learning about Linguistics.* Hutchinson Educational, London, 1974.

RECOMMENDED READING

Anderson, W.L. & Stageberg, N.C. eds. *Introductory Readings on Language.* 2nd ed. Holt, N.Y., 1966.
Barber, C.L. *The Story of Language.* Pan, London, 1964.
Black, M. *The Labyrinth of Language.* Penguin, London, 1972.
Bloomfield, L. *Language.* Rev. ed. Allen & Unwin, London, 1967.
Bolinger, D. ed. *Intonation. Selected Readings.* Penguin, Harmondsworth, 1972.
Brosnahan, L.F. & Malmberg, B. *Introduction to Phonetics.* C.U.P., Cambridge, 1970.
Cherry, C. *On Human Communication.* 2nd ed. M.I.T. Press, Cambridge, Mass., 1966.
Chomsky, N. *Language & Mind.* Harcourt, Brace & Jovanovich, N.Y., 1972.

GENE203 THE WORLD OF LANGUAGE A (CONT'D)

Crystal, D. *Linguistics.* Penguin, Harmondsworth, 1971.
Denes, P.B. & Pinson, E.W. *The Speech Chain. The Physics & Biology of Spoken Language.* Bell Telephone Laboratories, 1968 etc.
Fowler, R. *Understanding Language: An Introduction to Linguistics.* R.K.P., London, 1974.
Fudge, E.C. ed. *Phonology. Selected Readings.* Penguin, London, 1973.
Hayakawa, S.I. *Language in Thought and Action.* 2nd ed. Allen & Unwin, London, 1965.
Leech, C. *Semantics.* Penguin, London, 1974.
Lyons, J. *Introduction to Theoretical Linguistics.* C.U.P., Cambridge, 1969.
Lyons, J. ed. *New Horizons in Linguistics.* Penguin, Harmondsworth, 1976.
Minnis, W. ed. *Linguistics at Large.* Paladin, Herts, 1971.
O'Connor, J.D. *Phonetics.* Penguin, London, 1973.
West, F. *The Way of Language. An Introduction.* Harcourt, Brace & Jovanovich, N.Y., 1975.

GENE204 THE WORLD OF LANGUAGE B

Lectures 2; Tutorial/Demonstration 1
Assessment: Will be based on 3 class tests, and weekly assignments mainly in the form of short answers to specific questions in text book.

Continues the investigation of aspects of language, such as grammar and usage, and looks at certain specific contexts of language use, e.g. educational, sociological, computational, literary.

TEXTBOOKS

Bolinger, D. *Aspects of Language.* 2nd ed. Harcourt, Brace & Jovanovich, N.Y., 1975.
Stork, F.C. & Widdowson, J.D.A. *Learning About Linguistics.* Hutchinson Educational, London, 1974.

RECOMMENDED READING

Adams, P. ed. *Language in Thinking.* Penguin Modern Psychology Readings, London, 1972.
Barnes, D., Britten, J., Rosen, H., & the L.A.T.E. *Language, the Learner and the School.* Rev. ed. Penguin Papers in Education, London, 1971.
Darbyshire, A.E. *A Grammar of Style.* Andre Deutsch, London, 1971.
Doughty, P., Pearce, J. & Thornton, G. *Language in Use.* Arnold, London, 1971.
Fromkin, V.A. *The Computer as a Research Tool in the Construction of Modes of Linguistic Performance.* (Information Processing 68). North-Holland Publishing Co., Holland, 1959.
Garvin, P.L. ed. *Natural Language and the Computer.* McGraw-Hill, N.Y., 1973.
Ghizzetti, A. ed. *Automatic Translation of Languages.* (N.A.T.O. Papers). Pergamon Press, N.Y., 1966.
Giglioli, P.P. ed. *Language and Social Context.* Penguin Modern Psychology Readings, London, 1972.
Goad, H. *Language in History.* Penguin, Harmondsworth, 1958.
Hays, D.G. *Introduction to Computational Linguistics.* American Elsevier Co., N.Y., 1967.
Halliday, M.A.K. *Explorations in the Functions of Language.* Arnold, London, 1973.
Halliday, M.A.K. *Learning How to Mean. Explorations in the Development of Language.* Arnold, London, 1975.
Harnson, B. *English as a Second and Foreign Language.* Arnold, London, 1972.
Hough, G. *Style and Stylistics.* R.K.P., London, 1969.
Householder, F. ed. *Syntactic Theory: I. Structuralist.* Penguin, London, 1972.
Jacobs, R.A. & Rosenbaum, P.S. *Transformations, Style and Meaning.* Xerox College Publishing, Waltham, 1971.
Laird, C.G. & Gorrell, R.M. *English as Language. Background, Development, & Usage.* (Harbrace Sourcebook.) Harcourt, Brace, N.Y., 1961.
Languages and Machines. Computers in Translation and Linguistics. National Academy of Sciences, National Research Council, Washington D.C., 1968.
Mittins, W.H. etc. *Attitudes to English Usage.* O.U.P., Oxford, 1971.
Nida, E.A. *Towards a Science of Translating.* E.J. Brill, Leiden, 1964.
Oldfield, R.C. & Marshall, J.C. eds. *Language.* Penguin Modern Psychology, London, 1968.
Pit Corder, S. *Introducing Applied Linguistics.* Penguin, London, 1973.
Potter, S. *Language in the Modern World.* Penguin, London, 1960.
Pride, J.B. & Holmes, J. eds. *Sociolinguistics. Selected Readings.* Penguin, London, 1974.
Quirk, R. & Svartvik, J. *Investigating Linguistic Acceptability.* Mouton, The Hague, 1966.
Thomas, O. *Transformational Grammar and the Teacher of English.* Holt, Rinehart & Winston, N.Y., 1970.
Trudgill, P. *Sociolinguistics. An Introduction.* Penguin, London, 1974.
Tufte, V. *Grammar as Style.* Holt, Rinehart & Winston, N.Y., 1971.
Turner, G.W. *Stylistics.* Penguin, London, 1973.
Wilkins, D.A. *Linguistics in Language Teaching.* Arnold, London, 1972.

GENE213 WOMEN IN SOCIETY A*

Lecture 1; Tutorial 2; and Seminar 2 (per fortnight)
Assessment: Will be based on written assignments

This subject seeks to examine the changing role of women in society since 1850, integrating a sociological, historical and literary perspective. The literary texts will be taught with reference to the sociological and historical component of the subject, and the lectures on sociology and history will draw, to a certain extent, on the literary texts for illustrations.

TEXTBOOKS

Eliot, G. *The Mill on the Floss.*
James, H. *The Bostonians.*
Lawrence, D.H. *Women in Love.*
Shaw, G.B. *Plays Pleasant, Plays Unpleasant.*
Wilde, O. *Plays.*
Woolf, V. *To the Lighthouse.*
(All these texts are available in Penguin editions except for *The Mill on the Floss* which is, however, available in several paperback editions.)

RECOMMENDED READING

A list of recommended reading will be provided at enrolment.

GENE214 WOMEN IN SOCIETY B*

Lecture 2; Tutorial 1; and Seminar 2 (per fortnight)
Assessment: Will be based on written assignments

This subject will analyse the proposition that science with its privileged place in society and culture, and under the guise of its assumed objectivity, has contributed to the oppression of women through its theory and practice, which have both reflected and reinforced traditional sex roles and stereotypes and the institutions built upon them.

It will also examine the economic and political role of women in different societies.

TEXTBOOKS

Bardwick, T. ed. *Readings in the Psychology of Women.* Harper & Row, N.Y., 1972.
Hartman, Mary S. & Banner, L. eds. *Clio's Consciousness Raised.* Harper Torch Books, N.Y., 1974.

RECOMMENDED READING

A list of recommended reading will be provided at enrolment.

GENE220 CONCEPTS OF THE MODERN UNIVERSE

Lectures 2; Tutorial 1; Laboratory demonstration 1 (per week); One 3-hour field trip (visit to University Observatory) per session
Assessment: Will be based on written assignments and one 2-hour examination

Note: No special ability in Mathematics or Physics is required for this subject.

Astronomy is the most ancient of all sciences. Present-day astronomers are on the verge of great discoveries and the relationship between man and the universe is gradually being revealed. This course will illustrate the techniques used by astronomers and will attempt to give an understanding of the universe as we presently understand it. A field trip to the University's Observatory will give the opportunity to observe the phenomena discussed.

The Birth of Astronomy; The development of Astronomy as a Science; The Planets - A Description; The Formation of the Solar System; The Space Programme - Moon; To the Planets; The Search for Life; Future of the Space Programme; The Sun as a Star; The Violent Sun; Aurorae; Eclipses; Starlight; The Message of Starlight; The Visible Stars; The Variation in Stars; The Birth and Death of Stars; Telescopes, Big and Small; The Milky Way; The Universe of Galaxies; The Universe in Perspective.

TEXTBOOK

Wyatt, S. *Principles of Astronomy.* 2nd ed. Allyn & Bacon, Boston, 1971.

RECOMMENDED READING

Hodge, P.W. *Concepts of the Universe.* McGraw-Hill, N.Y., 1969.
Hoyle, F. *Astronomy.* Macdonald, London, 1962.
Lovell, B. *Man's Relation to the Universe.* Freeman, Calif., 1975.
Readings from SCIENTIFIC AMERICAN. *New Frontiers in Astronomy.* Freeman, Calif., 1975.
Wallenquist, A. *Penguin Dictionary of Astronomy.* Penguin, Harmondsworth, 1964.

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*Students are requested to note a late change to the sessions in which GENE213 and 214 are offered. The information appearing in Schedule A has been superseded as follows: GENE213 Women in Society A will now be offered in *second session* in 1978. GENE214 Women in Society B will be offered in *first session* in 1978.

GENE221 SCIENCE, TECHNOLOGY AND SOCIAL PROGRESS

Lectures/Seminars 2; Tutorial 1
Assessment: Will be based on two Seminar papers and one essay of approximately 5000 words.

The course will study aspects of science and technology from the standpoint of their influence, both beneficial and detrimental, on the fabric and beliefs of society, with special reference to social progress.

The role of science and technology in society will be examined together with its effects on the relationship between humanity and nature and also on relationships between people. The origins of contemporary attitudes to science and technology in particular and progress in general will be examined from an historical and cross-cultural perspective.

In the light of this, a more detailed analysis of some contemporary issues will be made. Particular issues might include resource scarcity, energy production systems, environmental pollution, environmental quality, the Green Revolution, medicine and health, and professionalism. Alternatives to the current scientific and technological mode will be explored in the light of the changes in current social and political organization implicit in such alternatives.

RECOMMENDED READING

Dickson, David. *Alternative Technology and the Politics of Technical Change.* Fontana, London, 1974.
Meadows, D., et al. *The Limits to Growth.* Earth Island, New York, 1970.
Passmore, John. *Man's Responsibility for Nature.* Duckworth, Woking, 1974.
Pirsig, R.M. *Zen and the Art of Motor Cycle Maintenance.* Bodley Head, London, 1974.
Roszak, T. *The Making of a Counter Culture.* Faber, London, 1969.
Tebbutt, T.H.Y. *Principles of Water Quality Control.* Pergamon Press, 1971.

GENE231 RELIGIOUS STUDIES A

Lecture 1; Seminars 2
Assessment: Will be based on two 2000-word essays and one 1-hour examination

APPROACHES TO RELIGION: One lecture and one tutorial each week will be devoted to linguistic, historical and philosophical problems to be found in the study of religion. One tutorial a week will concentrate on a second strand of the course, namely the study of some major religious documents. The two strands will be closely integrated, and, in the first session, selections from the New Testament will be studied.

(a) *The Language of Religion.* This segment includes a study of: the distinctiveness of religious language; anthropomorphism, both essential and extravagant; the disclosure language of revelation; and the question of the necessity and validity of 'religious' words used to describe the transcendental. This study will adopt a linguistic and anthropological approach.

(b) *Religion and History.* An examination of the implications for historical understanding of the life of Jesus. Consideration will be given to the historical purpose of the authors of the New Testament and a Christian interpretation of history will be explored.

(c) *Religion and Philosophy - Testimony and Religious Truth.* An examination of the nature, relevance and validity of attempts to support religious beliefs and attitudes by appeals to historical and personal experience. Particular attention will be paid to (i) methodological problems surrounding religious inferences based on the content of the Gospels and (ii) attempts to support, or refute, religious belief by appeal to facts about the physical world.

TEXTBOOKS

The New Testament.
Grant, R. *A Historical Introduction to the New Testament.* Fontana, London, 1963 (1974).

RECOMMENDED READING

A list of recommended reading will be provided at enrolment.

GENE232 RELIGIOUS STUDIES B

Lectures per week 1; Tutorials per week 2
Assessment: Will be based on two 2000-word essays and one 1-hour examination

RELIGION IN THE MODERN WORLD: One lecture and one tutorial a week will be devoted to an examination of the relationship between religion and science, modern theistic and atheistic thinking, problems in the sociology of religion and the sociological analysis of religion in Australia today. In the second tutorial a study will be made of the *Upanishads*, the *Bhagavad Gita* and the *Koran*.

(a) *Scientific and Religious Thought.* An examination of two case studies of conflict between science and religion: the trial of Galileo and the impact of Darwin's theory of evolution on nineteenth-century religious beliefs. Positivism and the attacks on non-empiricist knowledge. The decline of positivism and the acceptance of non-empirical sources of truth.

(b) *Modern Theistic and Atheistic Thinkers.* This section is an introduction to four thinkers who

GENE232 RELIGIOUS STUDIES B (CONT'D)

have exercised a significant influence on the religious thinking of twentieth-century man: Friedrich Nietzsche, Albert Camus, Teilhard de Chardin, and Dietrich Bonhoeffer.

(c) *A Sociological Approach to Australian Religion.* An examination of the function of religious belief in Australian culture.

TEXTBOOKS

Upanishads. Selected and translated by Swami Prabhavananda & F. Manchester. Mentor, N.Y., 1957.
Koran. Translated by N.J. Dawood. Penguin, Harmondsworth, 1956.
Bhagavad Gita. Translated by J. Muscaro. Penguin, Harmondsworth, 1962.
Bonhoeffer, D. *Letters and Papers from Prison.* Fontana, London, 1959.
Camus, A. *The Plague.* Penguin, Harmondsworth, 1960.
Nietzsche. *Thus spake Zarathustra.* Penguin, Harmondsworth, 1969.
Teilhard de Chardin, P. *The Phenomenon of Man.* Fontana, London, 1965.

RECOMMENDED READING

A list of recommended reading will be provided at enrolment.

2. SUBJECTS FOR PRESCRIBED COURSES

These subjects are available only where prescribed in the Schedules for the degrees of Bachelor of Engineering, Bachelor of Science (Engineering), or Bachelor of Metallurgy. Refer to the note at the end of Schedule C.

GENE431 ASIA IN THE TWENTIETH CENTURY, PART I

Lecture per week 1; Tutorial per week 1
Assessment: Written assignments and examination

Part I will deal with the course and consequences of World War II in the Pacific; economic, political, social and foreign policy problems since 1945 in relation to Japan, India, Pakistan and the nations of S.E. Asia; and in particular with the new nationalism and its interaction with communism, democracy and authoritarianism. The wars in Indo-China and Korea are examined in the light of new theories of warfare.

TEXTBOOKS

Students are advised to purchase the following books from the campus bookshop.

Fitzgerald, C.P. *The Birth of Communist China.* Pelican, Australia, 1964.
Fitzgerald, Frances. *Fire in the Lake.* Random House, New York, 1973.
Macmahon Ball, W. *Australia and Japan.* Nelson, Australia, 1969.
Wilson, D. *Asia Awakes.* Pelican, Australia, 1972.

RECOMMENDED READING

Obtainable from University Library and need not be bought.

Fitzgerald, C.P. *Concise History of East Asia.* Heinemann, Melbourne, 1966.
Grant, B. *Indonesia.* Pelican, Australia, 1972.
Lacouture, J. *Ho Chi Minh.* Pelican, Australia, 1969.
Maxwell, N. *India's China War.* Pelican, Australia, 1972.
Polomka, P. *Indonesia Since Sukarno.* Pelican, Australia, 1971.
Schram, S. *Mao Tse Tung.* Pelican, Australia, 1967.
Storry, R. *History of Modern Japan.* Pelican, Australia, 1968.
Wallbank, T.W. *Short History of India and Pakistan.* Mentor, New York, 1965.
Wint, G. *Asia Handbook.* Penguin, Australia, 1969.

GENE012 ARCHITECTURE, PART I

Lecture per week 1; Tutorial per week 1
Assessment: Written assignments and examination

The course is offered in two closely related parts, the second designed for those students who have developed an understanding of and interest in the ideas presented in the first session.

The aim is to demonstrate how modern architecture is a mirror of our times, just as the architecture of an earlier age reflected that age. The main focus will be on "the walls around us" now, though this will necessarily include reference to styles of other periods.

TEXTBOOKS

Freeland, J.M. *Architecture in Australia.* Cheshire, Melbourne, 1968.
Pevsner, N. *An Outline of European Architecture.* Pelican Harmondsworth, 1963.

GENE012 ARCHITECTURE, PART I (CONT'D)

RECOMMENDED READING

Cichy, B. *Architecture of the Ancient Civilizations in Color.* Thames & Hudson, London, 1966.
Fletcher, B. *A History of Architecture.* Athlone Press, 1975.
Roux, G. *Ancient Iraq.* Penguin, Harmondsworth, 1966.

GENE014 A HISTORY OF MODERN ART, PART I

Lecture per week 1; Tutorial per week 1
Assessment: Written assignments and examination

The purpose of these lectures is to give students an understanding of Western Art from the time of the initial flowering of the Renaissance in Italy, followed by the Northern Renaissance, thence through the three hundred and fifty years of Post-Renaissance Art to the first Modern Movement in the 1870's.

From 1870 to the beginning of World War I (that is, 1914) each of the more important art units will be discussed in some depth.

The session will terminate with Cubism and German Expressionism, thus providing for one revision lecture before the examination on the last day.

TEXTBOOKS

Lucie-Smith, E. *Movements in Art since 1945.* Thames & Hudson, London, 1969.
Read, H. *A Concise History of Modern Painting.* Thames and Hudson, London, 1975.

RECOMMENDED READING

Bazin, G. *A Concise History of Art, Part II.* Thames & Hudson, London, 1962.
Horton, M. ed. *Art in Australia.* Ure Smith, Sydney, 1969.
Whelpton, B. *Art Appreciation Made Simple.* W.H. Allen, London, 1970.

GENE432 ASIA IN THE TWENTIETH CENTURY, PART II

Lecture per week 1; Tutorial per week 1
Assessment: Written assignments and examination

Part II will concentrate on China against the background outlined in Part I. Finally, Australia will be discussed as an extension of Asia.

TEXTBOOKS AND RECOMMENDED READING

As for Asia in the Twentieth Century, Part I.

GENE023 ARCHITECTURE, PART II

Lecture per week 1; Tutorial per week 1
Assessment: Written assignments and examination

Man and Architecture. Building on the first session course, this will pursue more closely the concept of architectural expression, considering how this has reflected and can be expected to reflect man's outlook in the future. The hypothesis would thus contemplate the structure of man's future environment while remaining aware of previous cycles in the history of civilization.

TEXTBOOKS

As for Architecture, Part I.

RECOMMENDED READING

A list of recommended reading will be supplied at the beginning of Part II.

GENE024 A HISTORY OF MODERN ART, PART II

Lecture per week 1; Tutorial per week 1
Assessment: Written assignments and examination

This part of the course goes on to deal with art after World War I (Dada and Surrealism) through to the art of the 1970's, with special attention to the development of art in Australia.

GENE024 A HISTORY OF MODERN ART, PART II (CONT'D)

TEXTBOOK

Smith, B. *Australian Painting.* 2nd ed., O.U.P., Melbourne, 1972.

RECOMMENDED READING

As for History of Modern Art, Part I, but additional references to Australian Art will be given during the course.

GEOGRAPHY

Individual subjects offered by the Department of Geography may be included in the pass BA and BSc degrees. A major concentration in Geography can be taken at present only in the BA degree although BSc candidates may include Physical Geography subjects in the Science core of their degree. Fourth year studies for the BA Honours degree are also available.

At 100-level, two one-session subjects are offered, one in Physical, the other in Human Geography. Students may choose to do either or both but entry to higher level subjects is usually dependent upon successful completion of the appropriate first level subject. At higher levels students may choose to emphasise either physical or human geography or to combine the two by selecting from the range of options available, but it is usual for students wishing to major in the discipline to enrol in at least the Urban and Biogeography subjects in their second year.

Normally, students wishing to enter the Fourth year Honours programme should have completed at least 16 credit points of Geography at 200-level and either 48 credit points of 300-level Geography or 36 credit points in 300-level Geography and 12 credit points in a cognate field approved by the Department, usually at credit level or better. Attendance at such additional tutorial or seminar classes and the completion of any reading, writing or practical work as may be specified is also required.

In any subject field classes may be required as a normal part of the work load. At 100-level up to 2 days may be required per subject; each 200-level subject may require up to 3 days for Physical and 2 days for Human Geography; at 300-level up to 6 days for Physical and 3 days for Human Geography subjects may be required.

In all subjects overall grades may include the assessment of essays, tutorials, seminars, periodic tests, field and practical work as well as terminal examinations. The precise weighting to be given each component will be discussed with classes early in the session.

Where possible class times will be arranged to suit full and part-time students.

SCHEDULE ENTRIES

Refer to Schedule A for approved details of the subjects described in this section. Subjects which also appear in other schedules are:

Subject	*Schedule*
GEOG191	E-2
GEOG291	E-2
GEOG391	E-2
GEOG393	E-2

100-LEVEL

GEOG102 THE HUMAN ENVIRONMENT

Lectures per week - 2; Practical/seminar/tutorial - 3 hrs; fieldwork
Assessment: 1 examination; laboratory/seminar reports

This subject focuses upon the spatial structure of modern, urban-industrial socio-economic systems and on the inter-relationships between structure and behaviour in the system. Comparative references will be made to situations in the developing world. Topics treated include socio-economic development and the evolution of population concentrations, metropolitan dominance and the spatial structuring of the metropolitan region, regional disparities in welfare and the quality of life, the internal structuring of the metropolis, population densities and social pathologies in the metropolis, urban expansion and renewal, environmental quality, migration and diffusion.

TEXTBOOKS

Johnston, R.J. *Spatial Structures.* Methuen, London, 1973.
Robinson, R. *Urban Illawarra.* Sorret, Melbourne, 1977.

RECOMMENDED READING

Abler, R., Adams, J.S. & Gould, P. *Spatial Organization: the Geographer's View of the World.* Prentice-Hall, New York, 1971.
Cox, K.R. *Man, Location and Behaviour.* Wiley, New York, 1972 (paperback).
Morrill, R.L. *The Spatial Organization of Society.* Wadsworth, Belmont, 1970.
Smith, D.M. *The Geography of Social Wellbeing in the United States.* McGraw-Hill, New York, 1970.
Toyne, P. & Newby, P.T. *Techniques in Human Geography.* Macmillan, New York, 1972.

GEOG112 THE PHYSICAL ENVIRONMENT

Lectures per week - 2; Practical/tutorial - 3 hrs; fieldwork
Assessment: 1 examination; practical work; major essays; short essays

GEOG112 THE PHYSICAL ENVIRONMENT(CONT'D)

This subject presents an introduction to geomorphology in general and Australian landforms in particular. Consideration is given to the development of landforms and associated landscapes; and to the geomorphic, biologic and climatic processes involved, and the way in which these vary over time. Topics covered include structural and tectonic landforms, weathering and soil formation, hillslope evolution, fluvial and coastal morphodynamics, and aspects of applied geomorphology.

TEXTBOOK

Twidale, C.R. *Analysis of Landforms.* Wiley, Sydney, 1976.

RECOMMENDED READING

Barry, R.G. and Chorley, R.J. *Atmosphere; Weather and Climate.* 3rd ed. Methuen, London, 1976.
Claiborne, R. *Climate, Man and History.* Angus and Robertson, London, 1970.
Davies, J.L. *Geographical Variation in Coastal Development.* Hafner, New York.
Detwyler, T.R. *Man's Impact on Environment.* McGraw-Hill, New York, 1971.
Jennings, J.N. *Karst.* A.N.U. Press, Canberra, 1971.
Ollier, C. *Volcanoes.* A.N.U. Press, Canberra, 1972.
Twidale, C.R. *Structural Landforms.* A.N.U. Press, Canberra, 1971.
Young, A. *Slopes.* Oliver & Boyd, Edinburgh, 1972.

GEOG192 THE PHYSICAL ENVIRONMENT (SCIENCE)

Lectures per week - 2; Practical/tutorial - 3 hrs; up to 2 days fieldwork
Assessment, Description and Books: See GEOG112

200-LEVEL

GEOG202 URBAN LOCATION AND STRUCTURE

Lectures per week - 2; Practical/tutorial - 3 hrs
Assessment: 1 examination; 1 essay; 1 tutorial paper; practical session reports

This subject focuses on the city and the urban system as they have developed in western countries. Lecture and tutorial classes examine hypotheses and theories relating to the evolution and present structures of urban systems, the processes by which land uses and social groups are sorted in the urban landscape, temporal changes in the distribution of these uses and groups, and the spatial perceptions and behaviour of city residents. Practical sessions concentrate on the basic quantitative techniques necessary for an adequate understanding of the contemporary literature of urban analysis. Descriptive measures of statistical populations, statistical relationships between variables and the generation of hypotheses from regression analysis are examined using examples drawn from the theoretical context of the course.

RECOMMENDED READING

Berry, B.J.L. & Horton, F.E. *Geographic Perspectives on Urban Systems.* Prentice-Hall, New Jersey, 1970.
Bourne, L.S. *Internal Structure of the City: Readings on Space and Environment.* Oxford University Press, New York, 1972.
Haggett, P. *Locational Analysis in Human Geography.* Arnold, London, 1965.
Hammond, R. & McCullagh, P.S. *Quantitative Techniques in Geography: an Introduction.* Clarendon Press, Oxford, 1974.
Hauser, P.M. & Schnore, L.F. eds. *The Study of Urbanisation.* Wiley, New York, 1965.
Johnston, R.J. *Urban Residential Patterns.* Bell, London, 1971.
Timms, D.W.G. *The Urban Mosaic: Towards a Theory of Residential Differentiation.* Cambridge University Press, Cambridge, 1971.
Yeates, M.J. *An Introduction to Quantitative Analysis in Human Geography.* McGraw-Hill, New York, 1968.

GEOG204 POPULATION GEOGRAPHY

Lectures per week - 2; Practical/seminar/tutorial - 3 hrs
Assessment: 1 examination; research report; seminar papers

This subject focuses on the nature, origins and consequences of spatial variability in population growth patterns, structure, distribution and density within and between societies. Particular attention is devoted to the study of fertility, mortality and the migration process. Techniques of data collection, manipulation and analysis are also considered and practical experience in handling relevant data sources will be provided.

GEOG204 POPULATION GEOGRAPHY(CONT'D)

RECOMMENDED READING

Barclay, G.W. *Techniques of Population Analysis.* Wiley, New York, 1958.
Borrie, W.D. *Population and Australia: A Demographic Analysis and Projection.* 2 vols. First report of the National Population Inquiry, AGPS, 1975.
Demko, I.J., Rose, H.M. & Schnell, G.A. *Population Geography: a Reader.* McGraw-Hill, New York, 1970.
Kosinski, L. & Prothero, R.M. *People on the Move.* Methuen, London, 1975.
Meadows, D.H., Meadows, D.L. et. al. *The Limits to Growth.* Earth Island, New York, 1972.
Wilson, M.G.A. *Population Geography.* NAP, Melbourne, 1968.
Zelinsky, W., Kosinski, L. & Prothero, R.M. *Geography and a Crowding World.* Oxford University Press, Oxford, 1970.

GEOG206 ARID LANDSCAPES

Lectures per week - 2; Practical/seminar tutorial - 3 hrs
Assessment: 1 examination; practical/research reports; seminar papers

This introduction to arid landscapes is based on comparative studies of major deserts, especially those of Australia and North America. The main focus will be the interaction of past and present-day climates with landforms and vegetation. Attention will also be given to the diverse ways in which man has responded to and modified arid landscapes. Practical classes will deal with the analysis of aerial and satellite imagery of arid terrain.

TEXTBOOKS

Cooke, R.U. & Warren, A. *Geomorphology in Deserts.* Batsford, London, 1973.
Slatyer, R.O. & Perry, R.A. *Arid Lands of Australia.* A.N.U., Canberra, 1969.

RECOMMENDED READING

Amiran, D. & Wilson, A. *Coastal Deserts: Their Natural and Human Environments.* University of Arizona Press, Tucson, 1973.
Dunbier, R. *The Sonoran Desert: Its Geography, Economy & People.* University of Arizona Press, Tucson, 1968.
Hastings, J.R. & Turner, R. *The Changing Mile.* University of Arizona Press, Tucson, 1965.
Hills, E.S. ed. *Arid Lands.* Methuen, London, 1966.
Hunt, C. *Death Valley.* University of California Press, Berkeley, 1975.
Kelso, M., Martin, W. & Mack, L. *Water Supplies and Economic Growth in an Arid Environment: An Arizona Case Study.* University of Arizona, Tucson, 1973.
Mitchell, C. *Terrain Evaluation.* Longmans, 1973.
McGinnies, W. & Goldman, B. *Arid Lands in Perspective.* University of Arizona, Tucson, 1969.
Peterson, D. & Crawford, A. *Values and Choices in the Development of an Arid Land River Basin.* University of Arizona, Tucson (in press).
Twidale, C.R. *Structural Landforms.* A.N.U., Canberra, 1971.

GEOG210 SOUTH AND SOUTHEAST ASIA

Lectures per week - 2; Practical/seminar/tutorial - 3 hrs
Assessment: 1 examination; two essays

This subject concentrates on the physical, cultural and economic bases of internal variability in the South and Southeast Asian regions. Particular attention is paid to development patterns and problems e.g., modernization of agriculture, industry, settlements, and transport. The development patterns and processes are discussed and illustrated by detailed regional studies.

RECOMMENDED READING

Brown, L.R. *Seeds of Change: The Green Revolution and Developments in the 1970s.* Praeger, New York, 1970.
Courtenay, P.P. *A Geography of Trade and Development in Malaya.* Bell & Sons, London, 1972.
Fryer, D.W. *Emerging Southeast Asia.* Philip, London, 1970.
Ghee, Lim Tech. *Towards a Modern Asia: Aims, Resources and Strategies.* Heinemann, Kuala Lumpur, 1976.
Ingram, J.C. *Economic Change in Thailand.* Stanford University Press, Stanford, 1971.
Lefeber, L. and Datta-Chandhuri. *Regional Development Experiences and Prospects in South and Southeast Asia.* Monton, The Hague, 1971.
Malenbaum, W. *Modern India's Economy.* Merrill, Columbus, 1971.
Mareus, M.R. *Economic Progress and the Developing World.* Scott, Foresman, Glenview, 1971.
Myint, H. *Southeast Asia's Economy: Development Policies in the 1970s.* Penguin, Harmondsworth, 1972.
Osborn, James. *Area, Development Policy and the Middle City in Malaysia.* Chicago University Press, Chicago, 1974.
Silcock, T.H. *The Economic Development of Thai Agriculture.* A.N.U., Canberra, 1970.
Spencer, J.E. *Oriental Asia: Themes Towards a Geography.* Prentice-Hall, New Jersey, 1973.
Spencer, J.E. & Thomas, W.L. *Asia, East by South.* Wiley, New York, 1971.

GEOG212 BIOGEOGRAPHY

Lectures per week - 2; practical - 2 hrs; tutorial - 1 hr; fieldwork
Assessment: 1 examination; laboratory/fieldwork reports

This subject examines the character and distributions of plant communities and soil types. The ecology of vegetation communities is studied with respect to the inter-relationships between climate, soil and vegetation. Systematic studies are made of plant distributions, plant requirements, processes in plant growth, and the role of energy flow and biogeochemical cycling in the functioning of ecosystems.

Soil formation and characteristics are related to geomorphic, geological, chemical, and botanical processes. The distributions of soil types are related to environmental variation, both on a local and on a world scale.

TEXTBOOKS

Kellman, M.C. *Plant Geography.* Methuen, London, 1975.
Steilla, D. *The Geography of Soils.* Prentice Hall, New Jersey, 1976.

RECOMMENDED READING

Billings, W.D. *Plants and the Ecosystem.* Macmillan, London, 1965.
Corbett, J.R. *The Living Soil.* Martindale Press, N.S.W., 1969.
Daubenmire, R.F. *Plants and Environment.* Wiley, New York, 1959.
Greig-Smith, P. *Quantitative Plant Ecology.* Butterworths Scientific Publications, London, 1957.
Jackson, W. *Man and the Environment.* Wm.C. Brown & Co., Dubuque, Iowa, 1971.
Kormondy, E.J. *Concepts of Ecology.* Prentice-Hall, New Jersey, 1969.
Lotka, A.J. *Elements of Mathematical Biology.* Dover, New York, 1956.
Margalef, R. *Perspectives in Ecological Theory.* University of Chicago, Chicago, 1968.
Millar, C.E., Turk, L.M. & Foth, H.D. *Fundamentals of Soil Science.* 4th ed. Wiley International, New York, 1965.
Odum, E.P. *Fundamentals of Ecology.* 3rd. ed. W.B. Saunders, Philadelphia, 1971.
Oosting, H.J. *The Study of Plant Communities.* Freeman, San Francisco, 1956.
Russell, J. & Russell, E.W. *Soil Conditions and Plant Growth.* Longmans, London, 1966.
Turekian, K.K. ed. *The Late Cenozoic Glacial Ages.* Yale University Press, New Haven, 1971.
Watts, D. *Principles of Biogeography.* McGraw-Hill, New York, 1971.

GEOG291 BIOGEOGRAPHY (SCIENCE)

Lectures per week - 2; practical - 2 hrs; tutorial - 1 hr; Fieldwork (up to 3 days)
Assessment, Description and Books: See GEOG212

300-LEVEL

GEOG301 GEOGRAPHY OF TRANSPORT SYSTEMS

Lectures per week - 2; practical/seminar tutorial - 4 hrs; fieldwork
Assessment: 1 examination; research report; seminar papers/essay

This subject considers the significance of transport systems in structuring spatial patterns. It consists of two interdependent sections, one devoted to the development of a conceptual framework and substantive discussion of transport systems and the other concerned with statistical techniques and methodology.

Section A examines system concepts, analysis and structure for selected modal systems at various scales - for example, intra-urban transit systems, inter-urban road, rail systems and international air and maritime systems.

Section B deals with techniques for network analysis, optimizing flows in networks and regression analysis.

TEXTBOOKS

Eliot-Hurst, M.E. *Transportation Geography: Comments and Readings.* McGraw-Hill, New York, 1974.
Taaffe, E.J. & Gauthier, H.L. *Geography of Transportation.* Prentice-Hall, New Jersey, 1973.

RECOMMENDED READING

Bird, J. *Seaports and Seaport Terminals.* Hutchinson, London, 1971.
Blunden, W.R. *The Landuse Transport System. Analysis and Synthesis.* Pergamon, Oxford, 1971.
Bruton, M.J. *Introduction to Transportation Planning.* 2nd ed. Hutchinson, London.
Couper, A.D. *The Geography of Sea Transport.* Hutchinson, London, 1972.
Haggett, P. & Chorley, R.J. *Network Analysis in Geography.* Arnold, London, 1969.
Hay, A. *Transport for the Space Economy: A Geographical Study.* Macmillan, London, 1973.
Hutchinson, B. *Principles of Urban Transportation Planning.* McGraw-Hill, New York, 1974.
Lowe, J.C. & Morydas, S. *The Geography of Movement.* Houghton Mifflin, Boston, 1975.
Meyer, J.R., Kain, J.F. & Wohl, M. *The Urban Transportation Problem.* Harvard University Press, Cambridge, 1969.

GEOG301 GEOGRAPHY OF TRANSPORT SYSTEMS(CONT'D)

Proceedings of the First International Conference on Transportation Research. College d'Europe, Bruges, 1974.
Sharp, C.H. *Transport Economics.* Macmillan, London, 1973.

GEOG303 ADVANCED POPULATION GEOGRAPHY

Lectures per week - 2; practical/seminar/tutorial - 4 hrs
Assessment: 1 examination; research report; seminar papers

This subject focuses on the nature, origins and consequences of spatial variability in population growth patterns, structure, distribution and density within and between societies. Particular attention is devoted to the study of fertility, mortality and the migration process. Techniques of data collection, manipulation and analysis are also considered and practical experience in handling relevant data sources will be provided.

Each member of the class will be required to devise and complete a substantial research project. Practical sessions will be of a workshop nature and devoted largely to this activity.

RECOMMENDED READING

Barclay, G.W. *Techniques of Population Analysis.* Wiley, New York, 1958.
Borrie, W.D. *Population and Australia: A Demographic Analysis and Projection.* 2 vols. First Report of the National Population Inquiry. AGPS, 1975.
Demko, I.J., Rose, H.M. & Schnell, G.A. *Population Geography: A Reader.* McGraw-Hill, New York, 1970.
Kosinski, L. & Prothero, R.M. *People on the Move.* Methuen, London, 1975.
Meadows, D.H., Meadows, D.L. et. al. *The Limits to Growth.* Earth Island, New York, 1972.
Wilson, M.G.A. *Population Geography.* NAP, 1968.
Zelinsky, W., Kosinski, L. & Prothero, R.M. *Geography and a Crowding World.* Oxford University Press, Oxford, 1970.

GEOG305 REGIONAL PLANNING AND DEVELOPMENT

Lectures per week - 2; practical/seminar/tutorial - 4 hrs
Assessment: 1 examination; research project; 2 tutorial essays

The focus of this subject is the geographer's increasing involvement with questions relating to 'problem regions'. The first section considers the characteristics of lagging regions within the context of the evolution of space-economies, and pays particular attention to diffusion and agglomeration processes, the shrinkage of space, migration patterns and the role of the urban system in development. Questions of planning strategy for such disadvantaged regions are examined, special emphasis being placed on growth-centre approaches to development. In the second section the problems of the concentration of people and activities in the major Australian cities are reviewed, and existing policies for decentralisation are evaluated.

RECOMMENDED READING

Bourne, L.S. *Urban Systems: Strategies for Regulation.* Clarendon Press, Oxford, 1975.
Friedmann, J. & Alonso, W. eds. *Regional Development and Planning.* M.I.T. Press, Cambridge, 1964.
Glasson, J. *An Introduction to Regional Planning.* Hutchinson, London, 1974.
Hansen, N.M. ed. *Growth Centers in Regional Economic Development.* Free Press, New York, 1972.
McMaster, J.C. & Webb, G.R. *Australian Urban Economics: a Reader.* Australia and New Zealand Book Co., Sydney, 1976.
Stilwell, F.J.B. *Australian Urban and Regional Development.* Australia and New Zealand Book Co., Sydney, 1974.
Studies Commissioned by the Committee of Commonwealth/State Officials on Decentralisation. Parliamentary Paper No. 248, Government Printer of Australia, Canberra, 1975.

GEOG307 AGRICULTURAL GEOGRAPHY

Lectures per week - 2; practical/seminar/tutorial - 4 hrs
Assessment: 1 examination; research report; 2 essays

This subject considers the bases, origins, dispersal, and patterning of agriculture; models of agricultural location; agricultural structure and typology; measurements of agricultural attributes (e.g. intensity, productivity, concentration and diversification); regional comparisons in farm structure; agricultural change processes, e.g. the diffusion of innovation.

RECOMMENDED READING

Barlowe, R. *Land Resources Economics.* Prentice-Hall, New Jersey, 1971.
Boserup, E. *The Conditions of Agricultural Growth.* Allen & Unwin, London, 1970.
Bunting, A.H. ed. *Change in Agriculture.* Duckworth, London, 1970.
Found, W.C. *A Theoretical Approach to Rural Land Use Patterns.* Arnold, London, 1971.
Grigg, D. *The Harsh Lands.* Macmillan, London, 1970.

GEOG307 AGRICULTURAL GEOGRAPHY(CONT'D)

Hart, J.F. *The Look of the Land.* Prentice-Hall, New Jersey, 1974.
Southworth, H.M. & Johnston, B.F. *Agricultural Development and Economic Growth.* Cornell University Press, Cornell, 1967.
Tarrant, J.R. *Agricultural Geography.* David & Charles, London, 1974.
Wharton, C.R. ed. *Subsistence Agriculture and Economic Development.* Cass, London, 1969.
Williams, D.B. *Agriculture in the Australian Economy.* Sydney U.P., Sydney, 1967.

GEOG311 FLUVIAL GEOMORPHOLOGY

Lectures per week - 3; practical/seminar/tutorial - 3 hrs; fieldwork
Assessment: 1 examination; laboratory/fieldwork reports; essays

This subject studies the processes which control the formation of stream channels and drainage basins. The course provides an introduction to fluid mechanics, describes the morphology of rivers and fluvial landscapes, examines the main processes operating in fluvial systems, and attempts to explain the formation of fluvial landforms. Emphasis is also given to the interpretation of sedimentary structures for reconstructing flow environments.

Surface water hydrology is included as an integral part of drainage basin analysis.

TEXTBOOK

Leopold, L.B., Wolman, M.G. and Miller, J.P. *Fluvial Processes in Geomorphology.* Freeman, San Francisco, 1964.

RECOMMENDED READING

Allan, R.J.L. *Physical Processes of Sedimentation.* Unwin, London, 1970.
Blatt, H., Middleton, G., and Murray, R. *Origin of Sedimentary Rocks.* Prentice-Hall, New Jersey, 1972.
Chorley, R.J. ed. *Water, Earth, and Man.* Methuen, London, 1969.
Chow, V.T. ed. *Handbook of Applied Hydrology.* McGraw-Hill, New York, 1964.
Dury, G.H. *Rivers and River Terraces.* Macmillan, London, 1970.
Gregory, K.J. & Walling, D.E. *Drainage Basin Form and Process.* Edward Arnold, London, 1973.
Henderson, F.M. *Open Channel Flow.* Collier-Macmillan, London, 1966.
Morisawa, M. *Streams, Their Dynamics and Morphology.* McGraw-Hill, New York, 1968.*
Pitty, A.F. *Introduction to Geomorphology.* Methuen, London, 1971.
Thornbury, W.D. *Principles of Geomorphology.* Wiley, New York, 1954.
Ward, R.C. *Principles of Hydrology.* McGraw, London, 1967.

GEOG391 FLUVIAL GEOMORPHOLOGY (SCIENCE)

Lectures/tutorials per week - 4 hrs; laboratory/fieldwork - 8 hrs
Assessment, Description and Books: See GEOG311

GEOG313 COASTAL GEOMORPHOLOGY

Lectures per week - 2; practical/seminar/tutorial - 4 hrs; fieldwork
Assessment: 1 examination; tutorial essays; field project

This subject considers contemporary processes affecting the geomorphology of sandy beaches and coastal lagoons. Topics covered include: nearshore morphology, wave and water circulation patterns; nearshore zone sediment transport; interactions among waves, water table and beach front geomorphology; aeolian processes and coastal dune morphology; and estuarine geomorphology.

Particular attention will be given to field measurement techniques, and the application of all principles considered to beaches of Southeastern Australia (Adelaide to Southern Queensland).

PRELIMINARY READING

Bascom, W. *Waves and Beaches: The Dynamics of the Ocean Surface.* Anchor Doubleday Paperbacks, New York, 1964.

TEXTBOOK

Komar, P.D. *Beach Processes and Sedimentation.* Prentice-Hall Inc., New Jersey, 1976.

RECOMMENDED READING

Hails, J. & Carr, A. *Nearshore Sediment Dynamics and Sedimentation: An Interdisciplinary Review.* Wiley, London, 1975.*
Ingle, J.C. Jnr. *The Movement of Beach Sand.* "Developments in Sedimentology No. 5", Elsevier, Amsterdam, 1966.

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*Highly recommended.

GEOG313 COASTAL GEOMORPHOLOGY(CONT'D)

King, C.A.M. *Beaches and Coasts.* 2nd ed. Edward Arnold, London, 1972.
Lauff, G.H. ed. *Estuaries.* American Association for the Advancement of Science, 1967.
Meyer, R.E. ed. *Waves on Beaches and Resulting Sediment Transport.* Academic Press, New York, 1972.
Schwartz, M.L. *Barrier Islands.* "Benchmark Papers in Geology." Dowden, Hutchinson and Ross. Pennsylvania, 1973.*
Schwartz, M.L. *Spits and Bars.* "Benchmark Papers in Geology." Dowden, Hutchinson and Ross, Pennsylvania, 1972.
Silvester, R. *Coastal Engineering I and II.* "Developments in Geotechnical Engineering", Vols. 4A and 4B. Elsevier, Amsterdam, 1973.
U.S. Army, Coastal Engineering Research Center. *Shore Protection Manual.* U.S. Govt. Printer, Washington, 1973.*
Zenkovich, V.P. *Processes of Coastal Development.* Oliver and Boyd, London, 1967.*

GEOG393 COASTAL GEOMORPHOLOGY (SCIENCE)

Lectures/tutorials - 4 hrs per week; laboratory/fieldwork - 8 hrs per week
Assessment, Description and Books: See GEOG313

GEOG315 SOUTH AND SOUTH EAST ASIA (ADVANCED)

Lectures per week - 2; Practical/seminar/tutorial - 4 hrs
Assessment: 1 examination; research report; essay
Description and Books: As for GEOG210 South and South East Asia

400-LEVEL

GEOG402 GEOGRAPHY IV HONOURS

Final year Honours students are required to write a thesis of approximately 20-25,000 words on an approved topic embodying the results of a piece of supervised research and to participate in a seminar programme.

In the first session the seminar programme is concerned with questions of methodological and philosophical significance to research and teaching in modern Geography. In addition candidates will be involved in a directed reading/seminar course which explores a particular research field and culminates in the preparation of a research proposal. The second session is devoted mainly to research but participation in a workshop seminar is also required.

Assessment is based upon the thesis which will be externally and internally examined.

RECOMMENDED READING

Provided in class.

*Highly recommended.

GEOLOGY

The Geology subjects leading to the pass degree consist of two 100-level subjects (GEOL101 and 102), fourteen 200-level subjects, and fourteen 300-level subjects. There is, therefore, flexibility in the selection of subjects taken in second year. Students should, however, note the importance of the subject GEOL201 as a pre-requisite for many of the other subjects. For entry to the Geology IV Honours course students must satisfy requirements for the award of the degree of BSc in the Faculty of Science *and* have satisfactorily completed at least four 200-level and normally eight 300-level Geology subjects including: GEOL201, 202, 203, 204 or 304, 205 or 305, 206 or 306, 207 or 307 and 208 or 308.

In the transition period it will be necessary to grant part credit, on the recommendation of the Departmental Chairman of Geology, to students taking subjects where part of the content was included in units taken up to and including 1974.

SCHEDULE ENTRIES

Refer to Schedules A and E-2 for details of the subjects described in this section. Subjects which also appear in other schedules are:

Subject	*Schedules*
GEOL101	D & E-1
GEOL102	D & E-1
GEOL111	D
GEOL112	D
GEOL207	C
GEOL208	C
GEOL212	C
GEOL213	C
GEOL251	C
GEOL307	C
GEOL308	C
GEOL312	C
GEOL313	C
GEOL351	C

100-LEVEL

GEOL101 and 102 form the basic 100-level subjects and are the pre-requisites for all 200- and 300-level subjects in Geology. The subjects GEOL111 and 112 (Geology, Resources and the Environment I and II) are intended to be non-professional and will not normally be considered sufficient pre-requisites for the Geology II Science programme.

A no-credit point bridging course (intended to bring a student to a standard sufficient to undertake 200 level subjects) is available to students who wish to proceed on to 200 and 300 level subjects after satisfactorily completing GEOL111 and GEOL112. Students interested in doing this bridging course should contact the Chairman of the Department as soon as possible after the examination results for GEOL111 and GEOL112 have been posted.

GEOL101 INTRODUCTORY GEOLOGY, CRYSTALLOGRAPHY, MINERALOGY, PETROLOGY

3 hrs lectures and 3 hrs practical per week
Assessment: 1 theory examination; 3 multiple choice tests; 1 practical examination; 1 field tutorial essay

Geology as a science, geological time, the earth in space, shape of the earth, astrogeology. Earthquakes and earth structure, orogenesis and epeirogenesis, and volcanoes. The geological cycle.

Crystallography: Crystal symmetry, crystal forms, crystal systems, stereographic projection, twinning.

Mineralogy: Occurrence, form and physical properties of minerals. Mineral classification of silicates. Descriptive mineralogy of the rock-forming minerals (essentially the silicates).

Petrology: Field occurrence, lithological characters, classification and structural relationships of igneous, sedimentary and metamorphic rocks.

Economic Geology: Descriptive mineralogy of minerals of economic importance. Occurrence of ore deposits, coal and petroleum geology.

Practical Work: Study of crystal models in clinographic and stereographic projection. Identification and description of common minerals and rocks in hand-specimen. Two days of field tutorials will be conducted.

GEOL101 INTRODUCTORY GEOLOGY, CRYSTALLOGRAPHY, MINERALOGY, PETROLOGY(CONT'D)

TEXTBOOKS

Read, H.H. & Watson, J. *Introduction to Geology.* 2nd ed. Macmillan, London, 1968.
or
Gilluly, J., Waters, A.C. & Woodford, A.O. *Principles of Geology.* 3rd ed. Freeman, San Francisco, 1968.
Wollongong Sheet Geological Map. 1:250,000. Mines Department, New South Wales.

RECOMMENDED READING

Ernst, W.G. *Earth Materials.* Foundations of Earth Science Series. Prentice-Hall, Englewood Cliffs, N.J., 1969.
Mason, B. & Berry, L.G. *Elements of Mineralogy.* Freeman, San Francisco, 1968.*
or
Hurlbut, C.S., Jr. *Dana's Manual of Mineralogy.* 18th ed. John Wiley, New York, 1971.
Phillips, F.C. *An Introduction to Crystallography.* 4th ed. Longmans, London, 1971.*
Skinner, B.J. *Earth Resources.* Foundations of Earth Science Series. 2nd ed. Prentice-Hall, Englewood Cliffs, N.J., 1976.
or
Kesler, S.E. *Our Finite Mineral Resources.* McGraw-Hill, New York, 1976.
Verhoogen, J. et al. *The Earth - An Introduction to Physical Geology.* Holt, Rinehart & Winston, New York, 1970.*

GEOL102 PHYSICAL GEOLOGY, PALAEONTOLOGY AND STRATIGRAPHY, MAPPING

3 hrs lectures and 3 hrs practical per week
Assessment: 1 theory examination; 1 multiple choice test; 3 exercises; 1 practical examination; 1 field tutorial essay

Physical Geology: The main surface features of the earth. Surface and subsurface water. Weathering and the geological cycle. Lakes, rivers, glacial phenomena. Introductory physiography, including arid land and coastal processes. Folding and faulting in the crust.

Stratigraphy and Palaeontology: Basic principles of stratigraphy. Introductory palaeontology, especially the morphology of the main invertebrate animal and plant phyla. The geological history of the Australian continent and, more specifically, of the Sydney Basin and New South Wales.

Practical Work: Recognition and description of examples of important fossil groups and their use in stratigraphy. Interpretation and preparation of geological maps and cross-sections. Map reading and the use of simple geological instruments. Two days of field tutorials will be conducted.

TEXTBOOKS

Read, H.H. & Watson, J. *Introduction to Geology.* 2nd ed. Macmillan, London, 1968.
or
Gilluly, J., Waters, A.C. & Woodford, A.O. *Principles of Geology.* 3rd ed. Freeman, San Francisco, 1968.
Wollongong Sheet Geological Map 1:250,000. Mines Department, New South Wales.
A mapping handbook prepared by the Department of Geology.

RECOMMENDED READING

Black, R.M. *Elements of Palaeontology.* C.U.P., Cambridge, 1970.*
Brown, D.A., Campbell, K.S.W. & Crook, K.A.W. *The Geological Evolution of Australia and New Zealand.* Pergamon, Oxford, 1968.*
Longwell, G.R., Flint, R.F. & Sanders, J. *Physical Geology.* John Wiley, New York, 1969. Student edition.
Tarling, D.H. & Tarling, M.P. *Continental Drift - A study of the Earth's Moving Surface.* Penguin, London, 1972.
Twidale, C.R. *Geomorphology.* 2nd ed. Nelson, London, 1973.
Verhoogen, J. et al. *The Earth - An Introduction to Physical Geology.* Holt, Rinehart & Winston, New York, 1970.*

GEOL111 GEOLOGY, RESOURCES AND THE ENVIRONMENT I

2½ hrs lecture, ½ hr seminar and 1 hr tutorial/practical per week (on average)
Assessment: 1 theory examination; 2 essays; 1 multiple choice test; 1 practical examination; practical book mark

The Earth in space and its origin. The life cycle of the Earth's crust - its structure and structural evolution. Geological time and its measurement. Geology of the Earth's resources. Constitution of the Earth's crust. Igneous, sedimentary and metamorphic rocks and their origins. The nature and size of orebodies, discussing mines, mining and extractive industries activities,

*The purchase of these books is suggested for students who intend to proceed to later units in Geology.

GEOL111 GEOLOGY, RESOURCES AND THE ENVIRONMENT I(CONT'D)

and problems of waste treatment, rehabilitation, etc. Mineral fuels, both fossil and radioactive, and their reserves. Geothermal and other alternative energy sources. Groundwater.

Practical Work: Will illustrate the lecture material. Two days of field tutorials will be conducted.

TEXTBOOKS

Kesler, S.E. *Our Finite Mineral Resources.* McGraw-Hill, New York, 1976.
Bickford, M.E. et al. ('Contributing Consultants'). *Geology Today.* C.R.M. Books, Del Mar, California, 1973. (This is also a textbook for GEOL112).
or
The following books could be an alternative to Bickford et al., but do complement it.
Ernst, W.G. *Earth Materials.* Foundations of Earth Science Series. Prentice-Hall, Englewood Cliffs, N.J., 1969.
York, D. *Planet Earth.* McGraw-Hill, New York, 1975.

RECOMMENDED READING

Menard, F. *Geology, Resources, and Society.* W.H. Freeman, San Francisco, 1974.
A list of other relevant books will be distributed at the start of the course.

GEOL112 GEOLOGY, RESOURCES AND THE ENVIRONMENT II

2½ hrs lectures, ½ hr seminar, and 1 hr tutorial/practical per week (on average)
Assessment: 1 theory examination; 2 essays; 3 class exercises; 2 practical examinations

Surface processes, structure and scenery. Volcanism. Slope stability and the uses of Engineering Geology. Effects of construction activities on surface processes. Life and its origin and evolution on Earth. The development of vertebrates, including hominids. Palaeoecology. The preparation and interpretation of geological maps. The interaction of geological constraints upon the requirements of Society.

Practical Work: Will illustrate the lecture material. Two days of field tutorials will be conducted.

TEXTBOOKS

Bickford, M.E. et al. ('Contributing Consultants'). *Geology Today.* C.R.M. Books, Del Mar, California, 1973.
or
McAlester, A.L. *The History of Life.* Foundations of Earth Science Series. Prentice-Hall, Englewood Cliffs, N.J., 1968.

RECOMMENDED READING

Menard, F. *Geology, Resources, and Society.* W.H. Freeman, San Francisco, 1974.
Tarling, D.H. & Tarling, M.P. *Continental Drift.* Penguin, London, (Pelican Paperback), 1972.
Twidale, C.R. *Geomorphology.* 2nd ed. Nelson Australas., Sydney, Paperbacks, 1973.
A list of other relevant books will be distributed at the start of the course.

200-LEVEL

Note: GEOL201 is a pre-requisite for eight of the more advanced courses in Geology.

GEOL201 CRYSTALLOGRAPHY, CRYSTAL CHEMISTRY AND MINERALOGY

2 hrs lectures and 4 hrs practical per week
Assessment: 1 theory examination; practical exercises; 1 practical examination.

Crystallography: Stereographic projection, Wulff net. Crystal classes and point groups. Bravais lattices. Zones, zone law. Internal symmetry, space groups. Use of spherical triangles. Napierian triangles.

Optical Crystallography: Properties of waves, refraction in isotropic and anisotropic media. Refractive indices. Uniaxial and biaxial indicatrices and crystals. Use of the petrological microscope. Interference colours and extinction. Biot-Fresnel construction, uniaxial and biaxial interference figures.

Crystal Chemistry: Chemical composition and unit cell content. Components and phases. The bonding of atoms, the effect of ionic radius on structure. Isomorphism, atomic substitution and solid solution. Polymorphism. Pseudomorphism. Non-crystalline minerals. Classification of minerals.

Silicate Minerals: The application of the principles of crystal chemistry to, and a study of, the physical and chemical properties of the silicate minerals.

Practical: A laboratory study of the optical properties of minerals using the petrological microscope. A study of minerals in hand-specimen and thin-section.

GEOL201 CRYSTALLOGRAPHY, CRYSTAL CHEMISTRY AND MINERALOGY(CONT'D)

TEXTBOOKS

Deer, W.A., Howie, F.A. & Zussman, J. *An Introduction to the Rock-forming Minerals.* Longmans, London, 1966.
Kerr, P.F. *Optical Mineralogy.* 3rd ed. McGraw-Hill, New York, 1959.
or
Shelley, D. *Manual of Optical Mineralogy.* Elsevier, Amsterdam, 1975.
Mason, B. & Berry, L. *Elements of Mineralogy.* Freeman, San Francisco, 1968.
Phillips, F.C. *An Introduction to Crystallography.* 4th ed. Longmans, London, 1971.

RECOMMENDED READING

Berry, L.G. & Mason, B. *Mineralogy.* Freeman, San Francisco, 1959.
Bloss, F.D. *An Introduction to the Methods of Optical Crystallography.* Holt, Rinehart & Winston, New York, 1961.
Bloss, F.D. *Crystallography and Crystal Chemistry.* Holt, Rinehart & Winston, New York, 1971.
Phillips, W.R. *Mineral Optics.* Freeman, San Francisco, 1971.
Wahlstrom, E.E. *Optical Crystallography.* 4th ed. Wiley, New York, 1968.

GEOL202 IGNEOUS AND METAMORPHIC PETROLOGY

2 hrs lectures and 4 hrs practical per week
Assessment: 1 theory examination; practical exercises; 1 practical examination.

Igneous: Classification of rocks. Characteristics and classification of igneous rocks. Petrochemical calculations. Variations in associated igneous rocks. The consolidation of magma and a study of some synthetic silicate systems. Reaction series in igneous rocks. Some igneous rock associations.

Metamorphic: Characteristics and classification of metamorphic rocks. Definition and types of metamorphism. Factors of metamorphism, the concept of metamorphic facies. Graphical representation of metamorphic mineral paragenesis. Hornfels facies of contact metamorphism. Regional metamorphism. Facies series. Change of chemical composition of minerals with progressive metamorphism. Burial metamorphism.

Practical: Study of rocks in hand-specimen and thin-section.

TEXTBOOK

Williams, H., Turner, F.J. & Gilbert, C.M. *Petrography.* Freeman, San Francisco, 1955.

RECOMMENDED READING

Bayly, B.B. *Introduction to Petrology.* Prentice-Hall, Englewood Cliffs, N.J., 1968.
Carmichael, I.S.E., Turner, F.J. & Verhoogen, J. *Igneous Petrology.* McGraw-Hill, New York, 1974.
Hatch, F.H., Wells, A.K. & Wells, M.K. *Petrology of the Igneous Rocks.* 12th ed. Murby, London, 1961.
Turner, F.J. *Metamorphic Petrology.* McGraw-Hill, New York, 1968.

GEOL203 PRINCIPLES OF GEOLOGICAL MAPPING

1 hr lectures, 1½ hrs practical per week and up to a total of 10 days of fieldwork
Assessment: 1 theory examination; 2 reports; field mapping assignments; practical exercises; seminars

Course Description: Introductory lecture and practical course-work. Field mapping tutorial, held during a vacation. Students will map in detail the geology of a selected area. Map compilation and progress reports on each day's work with final interpretation of results in the laboratory tutorials after completion of the field tutorial.

RECOMMENDED READING

Kottlowski, F.E. *Measuring Stratigraphic Sections.* Holt, Rinehart & Winston, New York, 1965.
Lahee, F.H. *Field Geology.* 6th ed. McGraw-Hill, New York, 1961.
Lattman, L. & Ray, R.G. *Aerial Photographs in Field Geology.* Holt, Rinehart & Winston, New York, 1965.

GEOL204 PALAEONTOLOGY

3 hrs lectures and 3 hrs practical per week
Assessment: 1 theory examination; 1 practical examination; 1 essay; practical exercises

Palaeontology: Taxonomy, evolution, species concepts. Systematic treatment of the more important invertebrates - morphology, classification, phylogeny, ecology, geological distribution. Theoretical aspects of palaeontology. Vertebrate palaeontology. Palaeobotany. Study of demonstrations to illustrate the lecture course.

TEXTBOOKS

Black, R.M. *Elements of Palaeontology.* C.U.P., Cambridge, 1970.
Middlemiss, F.A. *A Guide to Invertebrate Fossils.* Hutchinson, London, 1968. (Only recommended for students not proceeding to further geology courses.)
Raup, D.A. & Stanley, S.M. *Principles of Palaeontology.* Freeman, San Francisco, 1971.

RECOMMENDED READING

Delvoryas, T. *Morphology and evolution of fossil plants.* Holt, Rinehart & Winston, New York, 1963.
Moore, R.C. ed. *Treatise on Invertebrate Palaeontology.* Geol. Soc. Amer., Boulder, Colorado.
Romer, A.S. *Vertebrate Paleontology.* 3rd ed. University of Chicago Press, Chicago, 1966.
Scagel, R.F., Bandoni, R.J., Reuse, G.E., Schofield, W.B., Stein, J.R. & Taylor, T.M.C. *An Evolutionary Survey of the Plant Kingdom.* Wadsworth, London, 1965.

GEOL205 SEDIMENTOLOGY

2 hrs lectures and 4 hrs practical per week
Assessment: 1 theory examination; 1 practical examination; 2 assignments; practical exercises

Description: Sediment particle size and measures of central tendency, sorting, skewness and kurtosis. Particle shape and surface texture. Mass and vectorial properties of sediment, grain fabric. Clastic and chemical sedimentary minerals. Heavy minerals and clay minerals. Textures of clastic and carbonate rocks. Diagenesis. Pourbaix diagrams. Classification of sedimentary rocks. Sedimentary provenance, processes and facies.

Practical: Study of sedimentary rocks in hand-specimen and thin-section. Heavy mineral and provenance studies. Size and shape analysis.

TEXTBOOKS

Blatt, H., Middleton, G. & Murray, R. *Origin of Sedimentary Rocks.* Prentice-Hall, Englewood Cliffs, N.J., 1972.
or
Selley, R.C. *An Introduction to Sedimentology.* Academic Press, London, 1976.
Folk, R.L. *Petrology of Sedimentary Rocks.* Hemphill's, Austin, Texas, 1974.
Kerr, P.F. *Optical Mineralogy.* 3rd ed. McGraw-Hill, New York, 1959.
Selley, R.C. *Ancient Sedimentary Environments.* Chapman & Hall, London, 1970.

RECOMMENDED READING

Bathurst, R.G.C. *Carbonate Sediments and their Diagenesis.* 2nd ed. Elsevier, Amsterdam, 1975.
Carozzi, A.V. *Microscopic Sedimentary Petrography.* Wiley, New York, 1960.
Krumbein, W.C. & Sloss, L.L. *Stratigraphy and Sedimentation.* 2nd ed. Freeman, San Francisco, 1963.
Milner, H.B. *Sedimentary Petrography.* 3rd ed. Murby, London, 1940.
Pettijohn, F.J. *Sedimentary Rocks.* 2nd ed. Harper, New York, 1957.
Reineck, H.E. & Singh, I.B. *Depositional Sedimentary Environments.* Springer-Verlag, Heidelberg, 1975.

GEOL206 STRATIGRAPHY AND STRATIGRAPHIC PALAEONTOLOGY

2 hrs lectures and 4 hrs practical per week
Assessment: 1 theory examination; 2 assignments; 1 practical examination

Description: Rock, time and time-rock unit concepts. Correlation methods and problems in the Pre-Cambrian and the Phanerozoic. A systematic treatment of the geological column discussing type successions together with other important overseas successions and those of representative Australian regions. The history of the Tasman, Caledonian, Alpine and other geosynclines.

Practical: Demonstrations of suites of rocks and fossils from important successions.

TEXTBOOK

Brown, D.A., Campbell, K.S.W. & Crook, K.A.W. *The Geological Evolution of Australia and New Zealand.* Pergamon, Oxford, 1968.

RECOMMENDED READING

Arkell, W.J. *The Jurassic System in Great Britain.* Clarendon Press, Oxford, 1933.
Arkell, W.J. *The Jurassic System in the World.* Oliver & Boyd, Edinburgh, 1956.
Kummel, B.H. *History of the Earth.* 2nd ed. Freeman, San Francisco, 1970.
Packham, G.H. ed. *The Geology of N.S.W.* Jour. Geol. Soc. Australia. Vol. 16, Part 1, 1969, pp. 1-645.
Rankama, K. ed. *The Pre-Cambrian.* Vols. 1 & 2. Wiley, Interscience, New York, 1963 and 1965.
Rayner, D.H. *The Geology of the British Isles.* Cambridge University Press, Cambridge, 1957.

GEOL207 GEOPHYSICS

Normally Geophysics should be taken as a 300-level subject
2 hrs lectures and 4 hrs practical per week
Assessment: 1 theory examination; laboratory practical exercises; 1 field project essay; 1 seminar

Geophysics: Geodesy - study of the shape of the earth, and its gravitational field. Seismology - study of natural (and artificial) earthquake phenomena, and their relation to the structure of the earth and its properties. The earth's near-atmosphere. Geomagnetism and palaeomagnetism. The earth's magnetic field, its characteristics and variations; the history of the geomagnetic field, especially as recorded in rocks and similar material. The sun, planets, moon, meteorites and their relationships. Geochronology - methods of radiometric dating and correlation. Geothermy - thermal properties of the earth, heat flow.

TEXTBOOK

Jacobs, J.A. *A Textbook of Geonomy.* A Hilger, London, 1974.

RECOMMENDED READING

Bullen, K.E. *An Introduction to the Theory of Seismology.* 3rd ed. C.U.P., Cambridge, 1963.
Garland, G.D. *The Earth's Shape and Gravity.* Pergamon, Oxford, 1965.
Le Pichon, X. et al. *Plate Tectonics.* Elsevier, Amsterdam, 1973.
McElhinny, M.W. *Palaeomagnetism and Plate Tectonics.* C.U.P., Cambridge, 1973.
Richter, C.E. *Elementary Seismology.* Freeman, San Francisco, 1958.
Runcorn, S.K. *Palaeogeophysics.* Academic Press, London, 1970.
Wyllie, P.J. *The Dynamic Earth: A Textbook in Geosciences.* Wiley, New York, 1971.

Exploration Geophysics: Introduction to the theory of the various techniques of Exploration Geophysics, especially with respect to Australia. Seismic methods, reflection and refraction. Potential methods (gravity and magnetic). Electrical and electromagnetic methods - using natural and artificial electrical and electromagnetic fields. Radiometric techniques. Methods of down-hole logging and correlation.

Practical: Calculations of real and imaginary problems based on the theory and interpretation outlined in lectures for various techniques. Study of Australian case histories, in particular, will be made. Field work will be undertaken, depending on the availability of instrumentation.

TEXTBOOKS

Dobrin, M.B. *Introduction to Geophysical Prospecting.* 3rd ed. McGraw Hill, New York, 1976.
or
Parasnis, D.S. *Mining Geophysics.* 2nd ed. Elsevier, Amsterdam, 1973.
Griffiths, D.H. & King, R.F. *Applied Geophysics for Engineers and Geologists.* Pergamon, Oxford, 1965.

RECOMMENDED READING

Grant, F.S. & West, G.F. *Interpretation Theory in Applied Geophysics.* McGraw-Hill, New York, 1965.
Heiland, C.A. *Geophysical Exploration.* Prentice-Hall, Hafner Reprint, Englewood Cliffs, N.J., 1967.

GEOL208 STRUCTURAL GEOLOGY AND GEOTECTONICS

2 hrs lectures and 4 hrs practical per week
Assessment: 1 theory examination; laboratory practical exercises; laboratory modelling; 1 essay

Description: Non-diastrophic and diastrophic deformation of rocks. Structures, internal and external, associated with igneous rocks. Introduction to structural analysis. Large-scale deformations such as alpine tectonics, and the structure and structural evolution of the European Alps and the Himalayas. Other examples of mountain-building, and geosynclines. Mid-oceanic ridges and associated features. Plate tectonics. Structural analysis, and study of folding, including superposed folding. Geometrical, kinematic and dynamic analysis of folded rocks. Stress and strain and its analysis, including determination of the strain ellipsoid. Cleavage and fracture, joint and fault development.

Practical: Problems using the stereographic projection with maps. Stereographic projection problems. Block diagrams. Stress and strain analysis. Study of deformed rocks in hand-specimen and thin-section. Map problems.

TEXTBOOKS

Hobbs, B.E., Means, W.D. & Williams, P.F. *An Outline of Structural Geology.* Wiley, New York, 1976.
Phillips, F.C. *The Use of Stereographic Projection in Structural Geology.* 2nd ed. Arnold, London, 1969.

GEOL208 STRUCTURAL GEOLOGY AND GEOTECTONICS(CONT'D)

RECOMMENDED READING

Billings, M.P. *Structural Geology.* 3rd ed. Prentice-Hall, Englewood Cliffs, N.J., 1972.
DeSitter, L.U. *Structural Geology.* McGraw-Hill, New York, 1956.
Hills, E.S. *Elements of Structural Geology.* 2nd ed. Chapman & Hall, Science Paperbacks, London, 1972.
Jaeger, J.C. *Elasticity, Fracture and Flow.* 3rd ed. Methuen, London, 1969. (Science Paperbacks).
Price, N.J. *Fault and Joint Development in Brittle and Semi-Brittle Rock.* Pergamon, Oxford, 1966.
Ramsay, J.G. *Folding and Fracturing of Rocks.* McGraw-Hill, New York, 1967.
Turner, F.C. & Weiss, L.E. *Structural Analysis of Metamorphic Tectonites.* McGraw-Hill, New York, 1963.

GEOL210 MICROPALAEONTOLOGY

1 hr lecture, 1 hr tutorial and 4 hrs practical per week
Assessment: 1 theory examination; 1 practical examination; 2 seminars; practical exercises

Description: Methods of preparation for microscopic study of microfossil concentrates from sediment samples; study of general attributes of these concentrates. Studies of taxonomy, ecology and evolution of the important microfaunal groups (Foraminiferida, Radiolaria, Ostracoda, Conodonta) and the important microfloral groups (spores, pollens, diatoms, coccoliths, chitinezoans).

RECOMMENDED READING

Glaessner, M.F. *Principles of Micropalaeontology.* Hafner Publishing Co., New York, 1967.
Jones, D.J. *Introduction to Microfossils.* Harper & Brothers, New York, 1956.
Murray, J.W. *Distribtuion and Ecology of Living Benthic Foraminiferids.* Heinemann Educational Books, London, 1973.

GEOL211 BASIN ANALYSIS AND OCEANOGRAPHY

2 hrs lectures and 4 hrs practical per week
Assessment: 1 theory examination; 4 assignments, 1 seminar

Description: The erosion, transport and deposition of granular solids by fluid media. Flow regimes and their characteristic bed forms. Effects of transport on size distribution. Turbidity currents. Slumping. Reference axes and symmetry concepts. Bedding types and structures. Deformational structures of sedimentary origin. Vectorial properties of sediments, sediment fabrics. Thickness and related maps. The reconstruction of palaeo-environments from sediment properties. The stratigraphy of a number of important Australian and overseas sedimentary basins. Water movements, waves and currents. Physical and chemical properties of sea water. Sediments of the ocean basins. The nature and structure of the ocean floor. Biological oceanography.

Practical: Examination of textures, fabrics and structures of sedimentary rocks in the laboratory. Demonstrations of specimens and maps from some basins covered in lectures. Field examination of sediments (Recent and Permian) in the Illawarra District. Experiments with erosion, transport and deposition of sands by water.

TEXTBOOKS

Allen, J.R.L. *Physical Processes of Sedimentation.* Unwin, London, 1970.
Brown, D.A., Campbell, K.S.W. & Crook, K.A.W. *The Geological Evolution of Australia and New Zealand.* Pergamon, Oxford, 1968.
Conybeare, C.E.B. & Crook, K.A.W. *Manual of Sedimentary Structures.* Bureau of Mineral Resources Bulletin 102, Canberra, 1968.
Turekian, K.K. *Oceans.* Prentice-Hall, Englewood Cliffs, N.J., 1968.

RECOMMENDED READING

Hill, M.N. ed. *The Sea.* 5 vols. Interscience, New York.
Komar, P.D. *Beach Processes and Sedimentation.* Prentice-Hall, Englewood Cliffs, N.J., 1976.
Menard, H.W. *Marine Geology of the Pacific.* McGraw-Hill, New York, 1964.
Middleton, C.V. ed. *Primary Sedimentary Structures and their Hydrodynamic Interpretation.* S.E.P.M., Tulsa, 1965.
Pettijohn, F.J. & Potter, P.E. *Atlas and Glossary of Primary Sedimentary Structures.* Springer, Berlin, 1964.
Potter, P.E. & Pettijohn, F.J. *Paleocurrents and Basin Analysis.* Springer, Berlin, 1963.

GEOL212 FOSSIL AND NUCLEAR FUELS

2 hrs lectures and 4 hrs practical per week
Assessment: 1 theory examination; 1 practical examination; 1 assignment; practical exercises

GEOL212 FOSSIL AND NUCLEAR FUELS(CONT'D)

Coal: Formation of peat and coals. Peat-anthracite series. Rank and type concepts. Macerals and microlithotypes. Chemical analysis and technological tests of coals. Minerals in coals. Microscopy of coal products such as cokes and carbons. Geology of coal-bearing sequences.

Practical: Examination of macerals in transmitted and reflected light. Use of immersion to adjust contrast, maceral analyses in reflected light. Measurement of reflectance and of refractive indices using polished sections.

RECOMMENDED READING

Francis, W. *Coal.* 2nd ed. Arnold, London, 1961.
International Committee for Coal Petrology. *Glossary of Terms.* 1963. Supplement, 1971.
Murchison, D.G. & Westoll, T.S. eds. *Coal and Coal Bearing Strata.* Oliver & Boyd, Edinburgh, 1968.
Raistrick, A. & Marshall, C.E. *The Nature and Origin of Coal Seams.* E.U.P., London, 1939. (Out of print).
Van Krevelen, D.W. *Coal, Typology, Chemistry, Physics.* Elsevier, Amsterdam, 1961.

Petroleum: History of the use of, and search for, petroleum. The distribution of petroleum in time and space. The generation, migration and accumulation of petroleum, including reservoir rock properties and trap characteristics. Methods of search for and exploitation of, including evaluation of, petroleum deposits. Gas, oil and petroleum solids. Australian occurrences will be described.

Nuclear Fuels: Description of the mineralogy and geology of important nuclear fuel deposits, and related mineral deposits. The methods of searching for such deposits.

Practical: Study of data on Australian petroleum deposits. Description of rotary drill cuttings samples.

TEXTBOOKS AND RECOMMENDED READING

Fischer, A.G. & Judson, S. eds. *Petroleum and Global Tectonics.* Princeton University Press, Princeton, 1975.
International Atomic Energy Agency. *Formation of Uranium Ore Deposits.* I.A.E.A., Vienna, 1974.
International Atomic Energy Agency. *Uranium Exploration Geology.* I.A.E.A., Vienna, 1970.
Levorsen, A.I. *Geology of Petroleum.* 2nd ed. Freeman, San Francisco, 1967.
or
Russell, W.L. *Principles of Petroleum Geology.* McGraw-Hill, New York, 1960.

GEOL213 ECONOMIC GEOLOGY AND EXPLORATION GEOCHEMISTRY

2 hrs lectures and 4 hrs practical per week
Assessment: 1 theory examination; practical exercises; 1 essay; 1 practical examination

Description: Outline of the scope of economic geology and of the processes of concentration of economically important minerals. Introduction to some classifications of ore deposits. Description, with examples, of the major types of ore deposits - those contained in igneous rocks, those associated with igneous rocks. Sedimentary ore deposits. Effects of metamorphism in forming new ore deposits, and modifying existing ore deposits. Metallogenic analysis - the distribution of ores in space and time. Appraisal techniques. Australian ore deposits. Geochemical prospecting.

Practical: An introductory course in ore microscopy. The mineragraphy of some important Australian ore bodies.

TEXTBOOKS

Edwards, A.B. *Textures of the Ore Minerals and Their Significance.* 2nd ed. Australas. Inst. Min. Metall., Melbourne, 1960.
Stanton, R.L. *Ore Petrology.* McGraw-Hill, New York, 1972.

RECOMMENDED READING

Barnes, H.L. *Geochemistry of Hydrothermal Ore Deposits.* Holt, Rinehart & Winston, New York, 1967.
Bateman, A.M. *Economic Mineral Deposits.* 2nd ed. Wiley, New York, 1950.
Geology of Australian Ore Deposits. 1st, 2nd and 3rd eds. (1953, 1965 and 1976), Australas. Inst. Min. Metall., Melbourne.
Park, C.F. & MacDiarmid, R.A. *Ore Deposits.* 2nd ed. Freeman, 1970.
Short, M.N. *Microscopic Determination of the Ore Minerals.* U.S. Geol. Surv. Bull. 914, Washington, 1940.
Uytenbogaardt, W. & Burke, E.A.J. *Tables for Microscopic Determination of Ore Minerals.* 2nd ed. Elsevier, Amsterdam, 1971.

GEOL214 GEOLOGY FOR ENGINEERS

2 hrs lectures and 2 hrs practical per week
Assessment: 1 theory examination; 2 essays; 1 multiple choice test; 1 practical examination

The Earth and its place in space, its origin and structure. The geological cycle and geological processes, geological time-scale. Introductory aspects of crystallography. Mineralogy, including clay mineralogy and sulphide mineralogy. Petrology - classification of igneous, sedimentary and metamorphic rocks (including their formation). Weathering and erosion, including mass movements (down-slope movements). Igneous activity. Faulting, folding and jointing. Aspects of geomorphology. Stratigraphy and methods of correlation. Mapping techniques. Remote sensing techniques - aerial photography and geophysical exploration techniques, including magnetic, gravity, seismic and electrical procedures. Introduction to geology report writing and reading. The role of geological studies in engineering.

Practical Work: Will include introductory mineralogy, petrology (including weathered rocks) and introductory mapping. Field work (two days) will be a necessary part of the practical work. Satisfactory reports of the practical work must be completed.

TEXTBOOKS

Blyth, F.G.H. *Geology for Engineers.* 5th ed. Arnold, London, 1967.
or
Krynine, D.P. & Judd, W.R. *Principles of Engineering Geology and Geotechnics.* McGraw-Hill, New York, 1957.
Glasson, K.R. & McDonnell, K.S. *Graded Exercises in Geological Mapping.* Cheshire, Melbourne, 1968.

FECOMMENDED READING

Gass, I.G., Smith, P.J. & Wilson, R.C. *Understanding the Earth. A Reader in the Earth Sciences.* 2nd ed. Open Univ. Press (Artemis), Sussex, 1973.
Gordon, R.B. *Physics of the Earth.* Holt, Rinehart & Winston, New York, 1972.
Griffiths, D.H. & King, R.F. *Applied Geophysics for Engineers and Geologists.* Pergamon, Oxford, 1965.

GEOL251 GEOLOGY FOR MINING ENGINEERS I

2 hrs lectures, 2 hrs practical and seminars per week
Assessment: 1 theory examination; 2 essays; 1 multiple choice test; 1 practical examination; practical book mark

Description: The Earth in space, its origin and structure. The geological cycle and processes, geological time. Geology of the Earth's resources. Igneous, sedimentary and metamorphic rocks and their origins. The nature of ore bodies. Mines, mining and extractive industries activities, and problems of waste treatment. Mineral fuels, especially nuclear fuels. The role of geological studies in engineering.

Practical Work: Will illustrate the lecture material. Two days of field tutorials will be conducted.

TEXTBOOKS AND RECOMMENDED READING

Bickford, M.E. et al. ('Contributing Consultants'). *Geology Today.* C.R.M. Books, Del Mar, California, 1973.
Laporte, L.F. *Encounter with the Earth.* Canfield Press, Dubuque, Iowa, 1975.
Menard, F. *Geology, Resources and Society.* W.H. Freeman, San Francisco, 1974.
Read, H.H. & Watson, J. *Introduction to Geology. Vol. 1. Principles.* Macmillan, London, 1968.
Verhoogen, J., Turner, F.J., Weiss, L.E., Wahrhaftig, C. & Fyfe, W.S. *The Earth.* Holt, Rinehart & Winston, New York, 1970.

300-LEVEL

Field tutorials are an integral part of 300-level subjects.

GEOL301 ADVANCED CRYSTALLOGRAPHY, CRYSTAL CHEMISTRY AND MINERALOGY

2 hrs lectures and 4 hrs practical per week
Assessment: 1 theory examination; practical exercises; 1 practical examination

Optical Crystallography: Oil immersion techniques and mineral determination by dispersion in refractive index liquids. The universal stage, feldspar determination, location of vibration axes, optic axes and 2V measurement, determination of extinction angles.

X-Ray Mineralogy: Theory and practice of X-ray instrument techniques, powder photographs, cell dimensions.

GEOL301 ADVANCED CRYSTALLOGRAPHY, CRYSTAL CHEMISTRY AND MINERALOGY(CONT'D)

Crystal Chemistry: Solid-solid phase transitions, transformations of secondary co-ordination, transformations of primary co-ordination, transformations of the bond type, transformations of order-disorder, order-disorder reactions and the feldspars. Phase transitions at high pressures. Crystal chemistry of the pyroxenes and amphiboles. Crystal pathology. Aluminium silicates in metamorphism.

Crystallography, Mineralogy: An introduction to modern techniques used in crystallography and mineralogy -- X-ray diffraction, X-ray flourescence, electron microscopy, electron probe, spectroscopy, D.T.A., D.T.G., S.E.M.

Geochemistry: Elements of structural chemistry and some principles of thermodynamics. Structure of the atom, isotopes, radioactivity, ionic size, aggregates of ions, the crystalline state. Mineralogy of the mantle, experiments at high pressure. Meteorites. Distribution of the elements, the geochemical classification. Carbonate sediments. Free energy. Oxidation potential and Eh-pH diagrams. Isotope geology.

Practical: Determination of unknown mineral grains by immersion techniques and in thin-section. Exercises involving use of the universal stage. Determination of crystal class and cell dimensions from powder photographs. Silicate melts. Calculation of problems in geochemistry.

TEXTBOOKS

Bloss, J.D. *Crystallography and Crystal Chemistry.* Holt, Rinehart & Winston, New York, 1971.
Krauskopf, K. *Introduction to Geochemistry.* McGraw-Hill, New York, 1967.
or
Mason, B. *Principles of Geochemistry.* 3rd ed. Wiley, New York, 1968.

RECOMMENDED READING

Jenkins, R. & de Vries, J.L. *Practical X-ray Spectrometry.* 2nd ed. Macmillan, London, 1970.
Reed, S.J.B. *Electron Microprobe Analysis.* Cambridge U.P., Cambridge, 1975.

GEOL302 ADVANCED IGNEOUS AND METAMORPHIC PETROLOGY

2 hrs lectures and 4 hrs practical per week
Assessment: 1 theory examination; practical exercises; 1 practical examination

Theoretical Petrology: The phase rule, systems of one, two and three components. Eutectics and solid solutions. Complex binary systems. Ternary systems. The application of work on synthetic systems to petrology using, for example, systems such as nepheline-kalsilite-silica, quartz-albite-orthoclase-anorthite-water, diopside-forsterite-silica. Experimental work on the melting of natural rocks. Experimental and theoretical petrology as applied to metamorphic rocks. The mineralogical phase rule. Direct determination of equilibrium curves, reactions of synthesis. Use of thermodynamic data. Experimental appraisal of critical metamorphic reactions, reactions in pelitic assemblages, reactions in siliceous dolomitic limestones, experimental data relating to magnesian schists.

Petrology: Rock kindreds. Concept of primary and derivative magmas, crustal anatexis, magma generation in the upper mantle, partial melting. Tholeiitic, alkaline olivine basalt and high alumina basalt magmas, the basalt tetrahedron. The shoshonite magma. The calc-alkali association. For a more detailed study: Crystallisation of tholeiitic magma, alkali-basalt magma and derivative rocks. Rocks of the shoshonite magma association. High-alumina basalt. Ultramafic rocks. The calc-alkali magma and granite rocks. Orogenic vulcanicity. The gabbro-eclogite transformation. Lunar basalts. Types of metamorphism. Metamorphic zones, facies, facies series. Metamorphic reactions in carbonate rocks. Hornfelses. Zeolite, greenschist, blueschist and amphibolite facies. Granulites, eclogites and garnet peridotites. Metasomatism. Polymetamorphism.

Textures of Rocks: Structures and textures. The sequence of crystallization in granites, the development of K-feldspar megacrysts and quartz-feldspar intergrowths. Exsolution textures. Textures of basic igneous rocks. Textures of metamorphic rocks.

Practical: Study of suites of rocks in hand-specimen and thin-section. Thin-section studies of rock textures. Use of phase diagrams.

TEXTBOOKS

Carmichael, I., Turner, F.J. & Verhoogen, J. *Igneous Petrology.* McGraw-Hill, New York, 1974.
Turner, F.J. *Metamorphic Petrology.* McGraw-Hill, New York, 1968.

RECOMMENDED READING

Hess, H.H. & Poldervaart, A. eds. *Basalts.* Vols. 1 and 2. Interscience, New York, 1967 and 1968.
Joplin, G.A. *Petrography of Australian Metamorphic Rocks.* Angus & Robertson, Sydney, 1968.
Mehnert, K. *Migmatites and the Origin of Granitic Rocks.* Elsevier, Amsterdam, 1968.
Sørensen, H. ed. *The Alkaline Rocks.* Wiley, London, 1974.
Turner, F.J. & Verhoogen, J. *Igneous and Metamorphic Petrology.* 2nd ed. McGraw-Hill, New York, 1960.
Winkler, H. *Petrogenesis of Metamorphic Rocks.* 2nd ed. Springer-Verlag, Berlin, 1967.
Wyllie, P.J. ed. *Ultramafic and Related Rocks.* Wiley, New York, 1967.

GEOL303 ADVANCED GEOLOGICAL MAPPING AND GEOMORPHOLOGY

1 hr lecture and 1½ hrs practical per week and up to a total of 10 days of fieldwork
Assessment: 1 theory examination; field mapping assignments and reports; seminars; practical exercises

Advanced Geological Mapping: Field work will normally be conducted at the end of the vacation before first session. Students intending to enrol in this unit should consult the Chairman of the Department during the previous session.

Description: Lecture and laboratory tutorial course work will include the use of aerial photographs (including stereoscopic exercises) and satellite photographs in compiling geological maps. The emphasis will be on the use of these techniques in geological map compilation. The field tutorial will be similar to that outlined for Principles of Geological Mapping, but the area selected for field mapping will be more geologically complex.

Final compilation and interpretation will be completed in laboratory tutorials.

Geomorphology: The study of landforms and some other aspects of geomorphology.

Practical: Study of different landforms in stereoscopic pairs of photographs.

RECOMMENDED READING

Allum, J.A.E. *Photogeology and Regional Mapping*. Pergamon, Oxford, 1966.
Lahee, F.H. *Field Geology*. 6th ed. McGraw-Hill, New York, 1961.
Lattman, L. & Ray, R.G. *Aerial Photographs in Field Geology*. Holt, Rinehart & Winston, New York, 1965.
Twidale, C.R. *Geomorphology*. Nelson, Melbourne, 1968.

GEOL304 PALAEONTOLOGY

3 hrs lectures and 3 hrs practical per week
Assessment, Description and Books: See GEOL204

GEOL305 SEDIMENTOLOGY

2 hrs lectures and 4 hrs practical per week
Assessment, Description and Books: See GEOL205

GEOL306 STRATIGRAPHY AND STRATIGRAPHIC PALAEONTOLOGY

2 hrs lectures and 4 hrs practical per week
Assessment, Description and Books: See GEOL206

GEOL307 GEOPHYSICS

2 hrs lectures and 4 hrs practical per week
Assessment, Description and Books: See GEOL207

GEOL308 STRUCTURAL GEOLOGY AND GEOTECTONICS

2 hrs lectures and 4 hrs practical per week
Assessment, Description and Books: See GEOL208

GEOL309 MATHEMATICAL METHODS IN GEOLOGY

2 hrs lectures and 4 hrs practical per week
Assessment: 1 theory examination; 6 assignments.

Description: Scale, mathematical and conceptual geological models. Attributes of types of data, accuracy and precision. Some common geological distributions. Testing of populations to determine distribution. The normal distribution and the significance of moment measures, especially in relation to sediments. Properties of the mean. Hypothesis testing using tests on population means and variances as an illustration of its use in geology. Analysis of variance. Simple and general linear models. Response surface analysis as applied in stratigraphic, chemical and mineralogical data. Classification methods, discriminant functions, factor analysis. Time series analysis. Simulation. Aspects of reserves estimation. The use of mathematical methods in problem solving in geology.

Practical: Preparation of simple computer programmes. Use of library programmes to solve geological problems.

GEOL309 MATHEMATICAL METHODS IN GEOLOGY(CONT'D)

TEXTBOOKS

Davis, J.C. *Statistics and Data Analysis in Geology.* Wiley, New York, 1972.
or
Harbaugh, J. & Merriam, D.C. *Computer Methods in Geology.* Wiley, New York, 1968.
or
Krumbein, W.C. & Graybill, F. *An Introduction to Statistical Models in Geology.* McGraw-Hill, New York, 1965.

RECOMMENDED READING

Computer Contributions Series of the Geological Survey. Kansas, 1964.

GEOL310 MICROPALAEONTOLOGY

1 hr lecture, 1 hr tutorial and 4 hrs practical per week
Assessment, Description and Books: See GEOL210

GEOL311 BASIN ANALYSIS AND OCEANOGRAPHY

2 hrs lectures and 4 hrs practical per week
Assessment, Description and Books: See GEOL211

GEOL312 FOSSIL AND NUCLEAR FUELS

2 hrs lectures and 4 hrs practical per week
Assessment, Description and Books: See GEOL212

GEOL313 ECONOMIC GEOLOGY AND EXPLORATION GEOCHEMISTRY

2 hrs lectures and 4 hrs practical per week
Assessment, Description and Books: See GEOL213

GEOL351 GEOLOGY FOR MINING ENGINEERS II

2 hrs lectures; 1 hr tutorial; 3 hrs practical per week
Assessment: 1 theory examination; practical exercises; field tutorial essay; 1 practical examination

Mineralogy and Petrology: Including identification by elementary microscope techniques. Petrography of rocks stressing building materials.

Structural Geology: Strength properties of rocks, alteration and discontinuities, geological influences on the stability of mine openings. Geological basis of natural and artificial slope stability.

Economic Geology: Classification of ore deposits, stratiform ores. Petroleum Engineering. Exploration methods. Methods of assessing ore, coal and oil and natural gas reserves.

Introductory Geophysics: Geophysical methods with reference to hazard assessment in engineering works, seismic techniques.

Systematic Palaeontology and Stratigraphy.

Elementary Structures and Mapping.

Practical: Practical work includes the identification of minerals, rocks and ores in hand-specimen and thin-section. Geological mapping description of fossils. Seminars. Three days of field tutorials will be conducted.

TEXTBOOKS AND RECOMMENDED READING

Cook, A.C. ed. *Australian Black Coal - Its occurrence, mining, preparation and use.* Illawarra Branch Aus. I.M.M., 1975.
Dobrin, M.B. *Introduction to Geophysical Prospecting.* 2nd ed. McGraw-Hill, New York, 1960.
Duncan, N. *Engineering Geology and Rock Mechanics.* Vols. 1 and 2. Leonard Hill, London, 1969.
Heiland, C.A. *Geophysical Exploration.* Prentice-Hall, Hafner Reprint, Englewood Cliffs, N.J., 1967.
Mason, B. & Berry, L.G. *Elements of Mineralogy.* Freeman, San Francisco, 1968.
Parasnis, D.S. *Mining Geophysics.* 2nd ed. Elsevier, Amsterdam, 1973.
Ramsay, J.G. *Folding and fracturing of Rocks.* McGraw-Hill, New York, 1967.
Stanton, R.L. *Ore Petrology.* McGraw-Hill, New York, 1972.
Williams, H., Turner, F.J. & Gilbert, C.M. *Petrography.* Freeman, San Francisco, 1955.

400-LEVEL

GEOL401 GEOLOGY HONOURS

Pre-requisites: Students must satisfy requirements for the award of the degree of BSc in the Faculty of Science *and* have satisfactorily completed at least four 200-level and normally eight 300-level Geology subjects including: GEOL201, 202, 203, 204/304, 205/305, 206/306, 207/307 and 208/308.

Assessment: 2 theses; 4 theory examinations; 4 seminars

Description: The formal parts of this subject will consist of at least four courses to be offered per year from the following: history of geological thought, some topical aspects of geology, mineral paragenesis, rock magnetism, biostratigraphy, mathematical geology, coal and petroleum geology, sedimentology. The other parts of the course will be field and laboratory projects, seminars and study of selected references.

RECOMMENDED READING

The Head of the Department should be consulted. However, readings in "History of Geological Thought" will be selected from the following:

Adams, F.D. *The Birth and Development of the Geological Sciences.* Dover, 1954 (reprint of 1938 edition).
Cloud, P. *Adventures in Earth History.* Freeman, San Francisco, 1970.
Geikie, A. *The Founders of Geology.* 2nd ed. Dover, 1962 (reprint of 1905 edition).
Wyllie, P.J. *How the Earth Works.* Wiley, New York, 1976.

HISTORY

SCHEDULE ENTRIES

Refer to Schedule A for approved details of the subjects described in this section.

100-LEVEL

HIST102 ENGLISH SOCIAL HISTORY 1815-1945

1 lecture, 2 tutorials per week
Assessment: 3 essays: 1,000 words, 2,000 words & 3,000 words; 2 tutorial papers: 750 words each

This subject is concerned with the shape of English society and in particular with changes in the class structure and in political, religious, legal and educational institutions. The other, and related, areas of concern are industrialisation, popular taste and culture in the 19th century, crime and public order, Victorian respectability, the emergence of the welfare state, and the social impact of the two world wars.

PRELIMINARY READING

Perkin, H. *The Origin of Modern English Society 1780-1880.* R. & K.P., London, 1969.
Webb, R.K. *Modern England from the Eighteenth Century to the Present.* Dodd, Mead, New York, 1975. Paperback.

TEXTBOOKS

Breach, R.W. & Hartwell, R.M. *British Economy and Society 1870-1970.* O.U.P., London, 1972. Paperback.
Harvie, C., Martin, G. & Scharf, A. *Industrialisation and Culture 1830-1914.* Macmillan, London, 1970. Paperback.
Webb, R.K. *Modern England from the Eighteenth Century to the Present.* Dodd, Mead, New York, 1975. Paperback.

RECOMMENDED READING

Best, G. *Mid Victorian Britain 1851-1875.* Weidenfeld & Nicolson, London, 1971. Paperback.
Briggs, A. *The Age of Improvement.* Longmans, London, 1960. Paperback.
Bruce, M. *The Coming of the Welfare State.* Batsford, London, 1972.
Burns, W.L. *The Age of Equipoise.* Allen & Unwin, London, 1964.
Carr, E.H. *What is History?* Penguin, London, 1964. Paperback.
Ensor, R.C.K. *England 1870-1914.* O.U.P., London, 1968.
Halévy, E. *A History of the English People in the Nineteenth Century.* Vol. 3. The Triumph of Reform. Benn, London, 1961. Paperback.
Harrison, J.F.C. *The Early Victorians 1832-1851.* Weidenfeld & Nicolson, London, 1971.
Harrison, J.F.C. *Society and Politics in England 1780-1960.* Harper, New York, 1965. Paperback.
Mowat, C.L. *Britain Between the Wars 1918-1940.* Methuen, London, 1964.
Pelling, H. *A History of British Trade Unionism.* Penguin, London, 1963. Paperback.
Pelling, H. *A Short History of the Labour Party.* 2nd ed. Macmillan, London, 1965.
Simon, B. *Studies in the History of Education 1780-1870.* Lawrence & Wishart, London, 1960.
Simon, B. *Education and the Labour Movement.* Lawrence & Wishart, London, 1965.
Simon, B. *The Politics of Educational Reform 1920-1940.* Lawrence & Wishart, London, 1974.
Taylor, A.J.P. *English History 1914-1945.* Pelican, London, 1970. Paperback.
Thompson, E.P. *The Making of the English Working Class.* Pelican, London, 1975. Paperback.
Tobias, J.J. *Crime and Industrial Society in the Nineteenth Century.* Pelican, London, 1972.
Woodward, E.L. *The Age of Reform 1815-1870.* O.U.P., London, 1962.

200-LEVEL

HIST221 AUSTRALIAN SOCIAL HISTORY, 1850-1930 A

1 lecture, 2 tutorials per week
Assessment: 4 essays: 1500 to 3000 words 70%; tutorial performance 20%; an examination 10%

The programme for the two sessions is as follows:
(a) Australian social history from 1850 to 1890. The principal themes for study are the relations between social classes, demographic change, and social welfare. Study will be based chiefly on the examination of primary records.

(b) Australian social history from 1890 to 1930. The emphasis remains as in session 1.

Credit for completion of the first session will be given only after successful completion of the second session.

RECOMMENDED READING

Appleyard, R. *British Emigration to Australia.* A.N.U. Press, 1964.
Austin, A.G. *Australian Education, 1788-1900.* Pitman, Melbourne, 1961.

HIST221 AUSTRALIAN SOCIAL HISTORY, 1850-1930 A(CONT'D)

Barcan, A. *A Short History of Education in N.S.W.* Martindale, Sydney, 1965.
Beever, M. & Smith, F.B. *Historical Studies: Selected Articles.* Second Series, M.U.P., 1967.
Bottomore, T.B. *Sociology.* Allen & Unwin, London, 1962.
Clark, C.M.H. *Selected Documents in Australian History.* Vol. 2. Angus & Robertson, Sydney, 1955.
Crowley, F. ed. *Modern Australia in Documents.* Vols. I & II. Melbourne, 1973.
Ebbels, R.N. *The Australian Labour Movement 1850-1907.* Lansdowne Press, Sydney, 1965. (Reprinted 1976).
Gollan, R.A. *Radical and Working Class Politics.* A.N.U. Press, 1967. Paperback.
Sawer, G. *Australian Federal Politics and Law, 1901-1929.* M.U.P., 1956.
Sawer, G. *Australian Federal Politics and Law, 1929-1950.* M.U.P., 1963.
Ward, R.B. *The Australian Legend.* O.U.P., Melbourne, 1960.

HIST222 FRENCH HISTORY, 1700-1940 A

1 lecture, 2 tutorials per week
Assessment: Essays: total number of words 7,500 (normally three 2,500 word essays); plus an examination

Session 1 - The chief events in French History from the age of Louis XIV to 1815 with emphasis on the growth of the state; the relationship of state and society; and with particular reference to science, enlightenment and revolution in French history to 1815. The emphasis in this part of the course will be on the relationship of the Enlightenment to the French Revolution.

Session 2 - The approach will be the same as in Session 1, the only difference being in the period to be covered, namely, from 1815 to 1940. The course will include a detailed study of France in the age of Napoleon III.

RECOMMENDED READING

Adams, W.E. ed. *The Western World: From 1700.* N.Y., 1968.
Cassirer, E. *The Philosophy of the Enlightenment.* Boston, 1962.
Craig, G.A. *Europe Since 1815.* N.Y., 1971.
Crocker, L.G. *An Age of Crisis. Man and World in Eighteenth Century French Thought.* Baltimore, 1959.
Denholm, A. *France in Revolution: 1848.* Sydney, 1972.
Dorn, W.L. *Competition for Empire 1740-1763.* Harper & Row, N.Y., 1964.
Halsted, J.B. ed. *December 2, 1851.* N.Y., 1972.
Harvey, D.J. *France Since the Revolution.* N.Y., 1968.
Kiernan, C. *The Enlightenment and Science in Eighteenth Century France.* Oxford, 1973.
Lively, J. *The Enlightenment.* London, 1966.
Martin, K. *French Liberal Thought in the Eighteenth Century.* London, 1962.
McManners, J. *Lectures in European History, 1789-1914.* Oxford, 1966.
Stearns, P.N. *European Society in Upheaval.* N.Y., 1975.

HIST223 RELIGION AND SOCIETY IN BRITAIN FROM THE REFORMATION A

1 lecture, 2 tutorials per week
Assessment: One 2,500 and one 3,000 word essay, 2 reports on documents and 6 summaries of selected extracts

The subject is concerned with the history of religion in its relations to three themes: (a) Crisis in Government with particular reference to the Henrician Reformation, the Elizabethan Settlement, the Puritan Revolution, and the Revolution of 1688. (b) Social developments such as the rise of capitalism, the industrial revolution, and the relations between social classes. (c) The history of ideas with particular reference to the challenge to religious faith from rationalism and the scientific revolution.

Session 1: 1517 - 1738 - From the Reformation to the Conversion of John Wesley.

Session 2: From the Evangelical Revival to the end of the Victorian Age.

TEXTBOOK
Documents: Documents to be studied in tutorials will be selected from Elton, G.R. *The Tudor Constitution.* C.U.P., 1960.

RECOMMENDED READING

Ashley, M.P. *England in the Seventeenth Century.* Penguin, 1952.
Bainton, R.H. *The Reformation of the Sixteenth Century.* Hodder & Stoughton, 1953.
Bennett, G.V. & Walsh, J.D. eds. *Essays in Modern Church History.* Black, 1966.
Bindoff, S.T. *Tudor England.* Penguin, 1950.
Brown, F.K. *Fathers of the Victorians: The Age of Wilberforce.* C.U.P.
Chadwick, O. *The Reformation.* Penguin, 1964.
Chadwick, O. *The Victorian Church.* Black, 1966, 1967 (2 vols.).
Cragg, G.R. *The Church and the Age of Reason, 1648-1789.* Penguin, 1960.
Davies, R.N. *Methodism.* Penguin, 1963.
Dickens, A.G. *The English Reformation.* Batsford, 1964.

HIST223 RELIGION AND SOCIETY IN BRITAIN FROM THE REFORMATION A(CONT'D)

Dickens, A.G. *Thomas Cromwell and the English Reformation.* E.U.P., 1959.
Edwards, M.C. *John Wesley and the Eighteenth Century.* Epworth, 1939.
Elton, G.R. *England under the Tudors.* Methuen, 1955.
Elton, G.R. *The Tudor Revolution in Government.* Cambridge U.P., 1953.
Grimm, H.J. *The Reformation Era.* Macmillan, 1954.
Haller, W. *The Rise of Puritanism.* Harper, 1957.
Hill, C. *The Century of Revolution, 1603-1714.* Nelson, 1961.
Knappen, M.M. *Tudor Puritanism.* Peter Smith, 1963.
Knox, R.A. *Enthusiasm.* O.U.P., 1950.
Morris, C. *Political Thought in England: Tyndale to Hooker.* O.U.P., 1953.
Neale, J.E. *Elizabeth I and her Parliaments.* St. Martin's Press, 1953.
Parker, T.M. *The English Reformation to 1558.* O.U.P., 1950.
Plumb, J.H. *England in the Eighteenth Century.* Penguin, 1973.
Rupp, E.G. *Studies in the Making of the English Protestant Tradition.* Cambridge. U.P., 1966.
Sykes, N. *Church and State in England in the XVIIIth Century.* Archon, 1962.
Symondson, A. *The Victorian Crisis of Faith.* S.P.C.K., 1970.
Tawney, R.H. *Religion and the Rise of Capitalism.* Penguin, 1961.
Trevor-Roper, H.R. *Religion, the Reformation and Social Change.* Clark.
Vidler, A.R. *The Church and the Age of Revolution.* Penguin, 1961.
Wearmouth, R.F. *Methodism and the Common People of the Eighteenth Century.* Epworth, 1946.
Weber, M. *The Protestant Ethic and the Spirit of Capitalism.* Unwin, 1967.

HIST227 RELIGION AND SOCIETY IN BRITAIN 1738-1860 A

1 lecture, 2 tutorials per week
Assessment: One 2,500 word essay plus 1 report on documents and 3 summaries of selected extracts
Other details: As for the session 2 component of HIST223

HIST231 RUSSIA, THE SOVIET UNION AND INTERNATIONAL COMMUNISM 1885-1962 A

1 lecture, 2 tutorials per week
Assessment: Two 2,000 word seminar papers per session and one 2,000 word essay during the year plus one critical commentary on tutorial papers per week

Session 1 will be devoted to a discussion of the collapse of the Tsarist Empire, the rise of Social-Democracy in Russia, its links with the International Socialist movement and the formation of the Soviet Union. Session 2 will concentrate on the development of the Soviet Union, the origins of the Cold War and the establishment and activities of the Communist International. Throughout, class relationships will be explored and economic development and its implications for society and politics will be emphasized.

Credit for completion of the first session will be given only after successful completion of the second session.

RECOMMENDED READING

Aragon, L. *A History of the U.S.S.R.* Weidenfeld & Nicolson, London, 1968.
Braunthal, J. *History of the International.* Nelson, London, Vol. I, 1966, Vol. II, 1967.
Cole, G.D.H. *History of Socialist Thought.* Macmillan, London, 7 Vols., 1953-60.
Deutscher, I. *The Unfinished Revolution.* O.U.P., London, 1967.
Dobb, M. *Soviet Economic Development.* Routledge & Kegan Paul, London, 1966.
Fleming, D.F. *The Cold War & Its Origins.* Vols. I & II. Allen & Unwin, London, 1961.
Lane, D. *Politics and Society in the U.S.S.R.* Weidenfeld & Nicolson, London, 1970.
Lenin, V.I. *Selected Works.* 3 Vols. F.L.P.H., Moscow, 1970.
Marx, K. & Engels, F. *Selected Works.* 2 Vols. F.L.P.H., Moscow, 1962.
Nettl, J.P. *The Soviet Achievement.* Thames & Hudson, London, 1967.
Schapiro, L.B. *The Communist Party of the Soviet Union.* Methuen, London, 1966.
Stalin, J.V. *The Essential Stalin.* ed. B. Franklin, Croom Helm, London, 1973.
Trotsky, L.D. *The Revolution Betrayed.* New Park Publications, London, 1967.
Trotsky, L.D. *History of the Russian Revolution.* 3 Vols. Sphere Books, London, 1967.

300-LEVEL

HIST310 AUSTRALIAN SOCIAL HISTORY 1850-1930 B

1 lecture, 2 tutorials per week
Assessment: Three 3,000 word essays and one 5,000 word essay
Other details: As for HIST221

HIST311 FRENCH HISTORY 1700-1940 B

1 lecture, and 2 tutorials per week
Assessment: Four 2,500 word essays and an examination
Other details: As for HIST222

HIST313 RELIGION AND SOCIETY IN BRITAIN FROM THE REFORMATION B

1 lecture, 2 tutorials per week
Assessment: Two 5,000 word essays, 4 reports on documents and 12 summaries of selected extracts

The subject is concerned with the history of religion in its relations to three themes: (a) Crisis in Government with particular reference to the Henrician Reformation, the Elizabethan Settlement, the Puritan Revolution, and the Revolution of 1688. (b) Social developments such as the rise of capitalism, the industrial revolution, and the relations between social classes. (c) The history of ideas with particular reference to the challenge to religious faith from rationalism and the scientific revolution.

Session 1: 1517 - 1738 - From the Reformation to the Conversion of John Wesley.

Session 2: From the Evangelical Revival to the end of the Victorian Age.

TEXTBOOK

Documents: Documents to be studied in tutorials will be selected from Elton, G.R. *The Tudor Constitution.* C.U.P., 1960.

RECOMMENDED READING

As for HIST223

HIST317 RELIGION AND SOCIETY IN BRITAIN 1738-1860 B

1 lecture, 2 tutorials per week
Assessment: One 5,000 word essay, 2 reports on documents and 6 summaries of selected extracts
Other details: As for the session 2 component of HIST223

HIST318 ENGLISH HISTORY 1865-1945 B

1 lecture, 2 tutorials per week
Assessment: Two 5,000 word essays or one 10,000 word essay, plus tutorial attendance and performance

The subject is concerned with the personalities and political impacts of six major politicians of the period covered by the subject. These are: Gladstone, Disraeli, Joseph Chamberlain, Ramsay MaxDonald, Lloyd George and Winston Churchill. The attitudes of each to party affiliations and social reform will receive particular attention, as will the rise and decline of the Liberal Party.

Credit for completion of the first session will be given only after successful completion of the second session.

PRELIMINARY READING

Neither textbooks nor reference books are recommended for this course. Students are expected to do their own bibliographical work. However, the following books, which contain useful bibliographies, and are available in the campus bookshop, are suggested for preliminary reading.

Adelman, Paul. *Gladstone, Disraeli and Later Victorian Politics.* London, 1970.
Morgan, K.O. *The Age of Lloyd George.* London, 1975.

HIST319 MODERN INDONESIAN AND MALAYSIAN HISTORY B

1 lecture, 2 tutorials per week
Assessment: Two 2,500 word essays plus a tutorial paper

Study will focus on four main elements: (a) basic cultural concepts and patterns - this will involve brief reference to history in the pre-modern period; (b) assessments of the Western colonial impact (political, social, and economic); (c) conceptual and social change related to the emergence of modern nationalism; (d) some key problems in the two countries, treated in historical perspective.

RECOMMENDED READING

Bastin, J.S. & Winks, R.W. *Malaysia.* Oxford University Press, Kuala Lumpur, 1966.
Cady, J.F. *Southeast Asia: Its Historical Development.* McGraw-Hill, New York, 1964.
Cowan, C.D. *Nineteenth Century Malaya.* Oxford U.P., London, 1961.
Feith, H. & Castles, L. eds. *Indonesian Political Thinking, 1945-1965.* Cornell U.P., Ithaca, 1970.

HIST319 MODERN INDONESIAN AND MALAYSIAN HISTORY B(CONT'D)

Hall, D.G.E. *A History of South-East Asia.* 2nd ed. Macmillan, London.
Legge, J.D. *Indonesia.* 2nd ed. Prentice-Hall, N.J., 1976.
McVey, R. ed. *Indonesia.* Yale U.P., New Haven, 1963.
Peacock, J.L. *Indonesia: An Anthropological Perspective.* Goodyear Publishing Co., Pacific Palisades, 1973.
Roff, W.R. *The Origins of Malay Nationalism.* Yale U.P., New Haven, 1967.
Wang Gungwu ed. *Malaysia.* Pall Mall, London/Praeger, New York, 1964.
Winstedt, R. *Malaya and Its History.* 7th ed. Hutchinson, London, 1966.

HIST321 RUSSIA, THE SOVIET UNION AND INTERNATIONAL COMMUNISM 1885-1962 B

1 lecture, 2 tutorials per week
Assessment: Two 2,000 word seminar papers per session; one 2,000 word essay and a group project of 5,000 words; plus one critical commentary on tutorial papers per week

Session I will be devoted to a discussion of the collapse of the Tsarist Empire, the rise of Social-Democracy in Russia, its links with the International Socialist movement and the formation of the Soviet Union. Session II will concentrate on the development of the Soviet Union, the origins of the Cold War and the establishment and activities of the Communist International. Throughout, class relationships will be explored and economic development and its implications for society and politics will be emphasized.

Credit for completion of the first session will be given only after successful completion of the second session.

RECOMMENDED READING

Aragon, L. *A History of the U.S.S.R.* Weidenfeld & Nicolson, London, 1968.
Braunthal, J. *History of the International.* Nelson, London, Vol. 1, 1966, Vol. II, 1967.
Cole, G.D.H. *History of Socialist Thought.* Macmillan, London, 7 Vols., 1953-60.
Deutscher, I. *The Unfinished Revolution.* O.U.P., London, 1967.
Dobb, M. *Soviet Economic Development.* Routledge & Kegan Paul, London, 1966.
Fleming, D.F. *The Cold War & Its Origins.* Vols. I & II., Allen & Unwin, London, 1961.
Lane, D. *Politics and Society in the U.S.S.R.* Weidenfeld & Nicolson, London, 1970.
Lenin, V.I. *Selected Works.* 3 Vols. F.L.P.H., Moscow, 1970.
Marx, K. & Engels, F. *Selected Works.* 2 Vols. F.L.P.H., Moscow, 1962.
Nettl, J.P. *The Soviet Achievement.* Thames & Hudson, London, 1967.
Schapiro, L.B. *The Communist Party of the Soviet Union.* Methuen, London, 1966.
Stalin, J.V. *The Essential Stalin.* ed. B. Franklin, Croom Helm, London, 1973.
Trotsky, L.D. *The Revolution Betrayed.* New Park Publications, London, 1967.
Trotsky, L.D. *History of the Russian Revolution.* 3 Vols. Sphere Books, London, 1967.

400-LEVEL

HIST401 HISTORY IV (HONOURS)

Students are advised to contact the Department. On broad outline, the Course consists of a thesis, worth 24 credit points and two courses, each of which counts for 12 credit points. Details of these courses are available in the Department.

HISTORY AND PHILOSOPHY OF SCIENCE

SCHEDULE ENTRIES

Refer to Schedule A for approved details of the subjects described in this section.

100-LEVEL

HPS131 GREEK SCIENCE A

2 lectures, 1 tutorial per week
Assessment: 2 examinations; 4 essays

It is commonly stated that natural science as an intellectual discipline had its origins in Greece about 600 B.C. The subject begins with a brief account of Egyptian and Babylonian science and civilizations and examines in detail the following topics: presocratic philosophy; the metaphysics of Socrates; Plato and Aristotle and the influence these views had on the development of science; Aristotle and his scientific thought; Hellenistic science and the decline of Greek Science. Each topic is discussed in the context of political, social, religious and economic developments which influenced the progress of science itself and which were influenced in turn by that progress. The course does not require any previous training in science or mathematics.

TEXTBOOKS

Clagett, M. *Greek Science in Antiquity.* Collier Books, N.Y., 4th Printing, 1973.
Cornford, F.M. *Before and After Socrates.* Cambridge U.P., Cambridge, 1972.
Guthrie, W.K.C. *The Greek Philosophers from Thales to Aristotle.* University Paperbacks, London, 1967.
Kuhn, T.S. *The Copernican Revolution.* Random House, N.Y., 1959.
Plato. *The Republic.* Penguin, Harmondsworth, 1955.
Santillana, G. de. *The Origins of Scientific Thought.* Mentor, New York, 1961.
Taylor, A.E. *Aristotle.* Dover, N.Y., 1955.

HPS130 THE SCIENTIFIC REVOLUTION AND THE SEVENTEENTH CENTURY A

2 lectures, 1 tutorial per week
Assessment: 2 examinations; 4 essays

In the seventeenth and early eighteenth centuries, Europeans began to look at the world around them in new ways. New questions were developed.

Fundamental changes took place in science in this period; Galileo created a new dynamics; Kepler revised the laws of planetary motion; and Newton, building on their work, set out a radically new theory of the universe. In medicine, anatomy and physiology as well as in philosophy and religion, old, established ideas were challenged by Vesalius, Harvey, Bacon, Descartes, Leibniz and many others. Taken all together, the work of these men amounted to an intellectual revolution.

The subject begins with a brief examination of major trends in Greek and medieval science, and proceeds to discuss five groups of topics.

Bacon and Baconianism: Empiricism; Experimentation and the virtuosi; the idea of Progress.

Descartes and Cartesianism: Rationalism; the Revival of Atomism; Materialism.

Newton and Newtonianism: the "New Philosophy"; the implications of the New Dynamics and Astronomy; the Mathematisation of Science.

Science and Religion: The Decline of Superstition and the Growth of Scepticism; the Physico-Theologists; Deism and the Argument of Design.

General Topics: Philosophy and Science; Methodology, the Problem of Certainty; Literature, Language and Science; the Battle of the Ancients and Moderns; the Advent of the Age of Reason. Early Scientific Institutions.

TEXTBOOKS

Butterfield, H. *The Origins of Modern Science: 1300-1800.* Bell, London, 1973.
Hall, A.R. *From Galileo to Newton, 1630-1720.* Fontana, Collins, London and Glasgow, 1970.
Koestler, A. *The Sleepwalkers.* Penguin, Harmondsworth, 1973.
Kuhn, T.S. *The Copernican Revolution.* Random House, N.Y., 1959.
Kuhn, T.S. *The Structure of Scientific Revolutions.* 2nd ed., University of Chicago Press, Chicago, Third impression, 1971.
Taylor, A.E. *Aristotle.* Dover, N.Y., 1955.

200-LEVEL

HPS231 GREEK SCIENCE B

2 lectures, 1 seminar per week
Assessment: 1 examination; 2 essays; 2 seminar papers

Description and Books: See HPS131 Greek Science A

HPS230 THE SCIENTIFIC REVOLUTION AND THE SEVENTEENTH CENTURY B

2 lectures, 1 seminar per week
Assessment: 1 examination; 2 essays; 2 seminar papers

Description and Books: See HPS130 The Scientific Revolution and the Seventeenth Century A

HPS232 THE DARWINIAN REVOLUTION A

2 lectures, 1 tutorial per week
Assessment: 1 examination; 2 essays; 1 research project

The eighteenth century brought new thinking with it; new thinking in terms of change. Social and political change were soon to grow out of it, and the idea of species change grew with them. Evolution and revolution had a common philosophical background, and the idea of evolution was to initiate its own revolution in the linked sciences of biology and geology and their religious and social ramifications of the late nineteenth century.

The subject will begin with an examination of eighteenth century ideas on progress, perfectability and history; the 'discovery of time' and the rejection of the static Newtonian picture; the 'temporalizing' of the Great Chain of Being.

This will provide a foundation for the study of the emergence of evolutionary ideas through the application of historical explanation to the biological problems of form and development, culminating in the fully articulated Darwinian theory of evolution by natural selection.

A detailed examination of the Darwinian theory of evolution, its philosophic, social, and cultural dimensions will follow.

Students will be expected to read extensively and to engage in cooperative group research in analysing the impact of Darwinism on later nineteenth and twentieth century scientific, religious, social, economic or political ideas. An inter-disciplinary approach will be stressed in selecting themes for research.

TEXTBOOKS

Appleman, P. ed. *Darwin - A Norton Critical Edition.* Norton, N.Y., 1970.
Coleman, W. *Biology in the Nineteenth Century.* Wiley History of Science Series, N.Y., 1971.
Darwin, C. *The Origin of Species.* Pelican, Harmondsworth, 1969.
Glass, B. et al. eds. *Forerunners of Darwin, 1745-1859.* Johns Hopkins Press, Baltimore, 1968.
Malthus, T.R. *An Essay on the Principle of Population: Text, sources and background criticism.* ed. Appleman, P., Norton, N.Y., 1976.

RECOMMENDED READING

Burrow, J.W. *Evolution and Society.* Cambridge University Press, London, 1966.
Collingwood, R.G. *The Idea of Nature.* Galaxy, N.Y., 1960.
Darwin, C. *The Voyage of the "Beagle".* Everyman, London, 1959.
Merz, J.T. *A History of European Thought in the Nineteenth Century.* Vols. 1-4. Dover, N.Y., 1965.
Pollard, S. *The Idea of Progress: History and Society.* Penguin, Harmondsworth, 1968.
Smith, P. *The Enlightenment, 1687-1776.* Collier, N.Y., 1962.

HPS213 SCIENCE AND SOCIETY 1A

2 lectures, 1 tutorial per week
Assessment: 1 examination; 1 essay; 1 tutorial paper

An account of the growth of the scientific movement from the early 17th to the 19th century, in relation to
(a) its social and cultural environment and the effects of social structures and social changes upon it;
(b) its internal organisation;
(c) its effects, intellectual and (via technology) material, upon society.

The emergence of an independent social role for science, as formulated by Bacon and actualized by the Royal Society and other organizations in the 17th century, and its subsequent development in Europe and elsewhere to the end of the 19th century; with emphasis on topics such as the Enlightenment, the Industrial Revolution, education, government and public attitudes in relation to the scientific movement in different countries during this period.

HPS213 SCIENCE AND SOCIETY 1A(CONT'D)

TEXTBOOKS

Ben David, J. *The Scientists Role in Society.* Prentice-Hall, Englewood Cliffs, N.J., 1971.
Pollard, S. *The Idea of Progress, History and Society.* Pelican, Harmondsworth, 1971.
Smith, P. *The Enlightenment.* Collier, New York, 1966.

HPS223 SCIENCE AND SOCIETY 2A

2 lectures, 1 tutorial per week
Assessment: 1 examination; 1 essay; 1 tutorial paper

Science in 20th century society, dealing with such topics as science and war, the relation between science, technology and economic growth, government science policy, the movement for social responsibility in science and the anti-science movement, ethical issues in scientific progress, modern pressures on traditional scientific values, science in totalitarian and developing countries, the dilemmas of "trans-science".

TEXTBOOKS

Dixon, B. *What is Science For?* Pelican, Harper, N.Y., 1973.
Jevons, F.R. *Science Observed.* George Allen and Unwin, London, 1973.
Sklair, L. *Organized Knowledge.* Paladin, St. Albans, 1973.
Barnes, B. *The Sociology of Science.* Pelican, Harmondsworth.

300-LEVEL

HPS332 THE DARWINIAN REVOLUTION B

2 lectures, 1 tutorial, 1 seminar per week
Assessment: 1 examination; 2 essays; 1 research project; 2 seminar papers

An advanced subject in the historical and philosophical development of the idea of biological evolution and its impact on Western thought.

Description and Books: See HPS232 The Darwinian Revolution A

HPS314 PHILOSOPHICAL AND IDEOLOGICAL PERSPECTIVES OF SCIENCE 1B

2 lectures, 1 tutorial per week; 2 seminars per fortnight
Assessment: 1 examination; 1 essay; 1 tutorial paper; 1 seminar paper

This subject will focus on the epistemological issues of the status and demarcation of scientific knowledge, beginning with an examination of the problem of induction and the different resolutions of it suggested by philosophers and scientists such as Hume, Mach, Popper and Medawar. The more sociological views of science put forward by Kuhn, Ravetz and Ziman will then by discussed, leading to a consideration of the influence of science as the dominant knowledge system of contemporary society.

TEXTBOOKS

Chalmers, A.F. *What Is This Thing Called Science?* University of Queensland Press, Bris., 1976.

RECOMMENDED READING

Easlea, B. *Liberation and the Aims of Science.* Sussex U.P., London, 1973.
Kuhn, T.S. *The Structure of Scientific Revolutions.* Chicago U.P., 1970.
Lakatos, I. & Musgrave A.E. eds. *Criticism and the Growth of Knowledge.* Cambridge U.P., London, 1970.
Magee, B. *Popper.* Fontana, N.Y., 1973.
Medawar, P.G. *Induction and Intuition in Scientific Thought.* Methuen University Paperbacks, London, 1969.
Popper, K.R. *Conjectures and Refutations.* Routledge & Kegan Paul, London, 1963.
Ziman, J. *Public Knowledge.* Cambridge U.P., Cambridge, 1968.

HPS324 PHILOSOPHICAL AND IDEOLOGICAL PERSPECTIVES OF SCIENCE 2B

2 lectures, 1 tutorial per week; 2 seminars per fortnight
Assessment: 1 examination; 1 essay; 1 tutorial paper; 1 seminar paper

An initial examination of the contention that science is neither objective nor ideologically neutral. This will be followed by an analysis of selected scientific theories, focusing on the demonstration of values and ideological influences in these theories and examining the ways in which these same theories in their turn have been used as scientific validation of the very values and ideologies they embody.

HPS324 PHILOSOPHICAL AND IDEOLOGICAL PERSPECTIVES OF SCIENCE 2B(CONT'D)

The major area of study used to develop this thesis will be evolutionary biology and ideology.

TEXTBOOKS

Barnes, B. *Scientific Knowledge and Sociological Theory.* Routledge & Kegan Paul, London, 1974.
Rose, H. & Rose, S. eds. *The Radicalisation of Science: Ideology of/in the natural sciences.* Macmillan, London, 1976.
Rose, H. & Rose, S. eds. *The Political Economy of Science: Ideology of/in the natural sciences.* Macmillan, London, 1976.

RECOMMENDED READING

Berger, J. *Ways of Seeing.* Pelican, Harmondsworth, 1972.
Easlea, B. *Liberation and the Aims of Science.* Sussex. U.P., London, 1973.
Lakatos, I. & Musgrave, A.E. eds. *Criticism and the Growth of Knowledge.* Cambridge U.P., London, 1970.
Plamenatz, J. *Ideology.* Macmillan, London, 1970.

HPS313 SCIENCE AND SOCIETY 1B

2 lectures, 1 tutorial per week, 2 seminars per fortnight

Description and Books: See HPS213 Science and Society 1A

HPS323 SCIENCE AND SOCIETY 2B

2 lectures, 1 tutorial per week, 2 seminars per fortnight

Description and Books: See HPS223 Science and Society 2A

400-LEVEL

HPS400 HISTORY AND PHILOSOPHY OF SCIENCE IV

Session requirements are as follows:

(a) A dissertation of approximately 20,000 word length.

(b) Historical theory and method for three contact hours per week throughout Session 1.

(c) Advanced philosophy of science for two contact hours per week throughout Session 1.

(d) Two of the following courses to run for two contact hours per week for ten weeks of Session 2:

Science and Ideology

Three major themes will be considered:
(i) The internal ideology of science; historical origins and contemporary adequacy.
(ii) The influence of external ideologies on science, e.g. Marxism, National Socialism, Industrial Capitalism.
(iii) The impact of the ideology of science on non-scientific fields of thought.

Aspects of Medieval Science

The reception and analysis of Aristotelianism and its relationship to philosophical and theological developments in the thirteenth and fourteenth centuries. Methodology, neo-platonism and the development of mathematical procedures. Technology and science. Science and the medieval world view.

Science Policy in the Australian Context

Discussion and research will focus on four major topics:
(i) The conventional model of science policy, which examines the contributions of research and development to national goals.
(ii) A critique of this model in the light of the particular needs of Australia.
(iii) An analysis of the impact of Western technology on developing countries, with special reference to Australia's role as both a developed, donor nation and an underdeveloped client nation.
(iv) The role of scientists in the formulation of science policy.

Scientific Thought in the Nineteenth Century

Philosophy of science. A study of the writings of J.F.W. Herschel, W. Whewell, J.S. Mill, A. Comte and E. Mach. Romanticism: F. Schelling, L. Oken, G. Hegal. The Marxists.

MATHEMATICS

SCHEDULE ENTRIES

Refer to Schedules A and E-1 for approved details of the subjects described in this section. Subjects which also appear in other schedules are:

Subject	*Schedules*
MATH101	C,D & E-2
MATH102	E-2
CSCI101	E-2
MATH201	C & E-2
MATH202	C & E-2
MATH211	E-2
MATH231	E-2
MATH233	D & E-2
MATH281	C
MATH282	C
MATH284	C
MATH285	C
MATH301	E-2
MATH302	E-2
MATH334	E-2
MATH351	E-2

TEXTBOOKS AND RECOMMENDED READING

Students will be advised on the appropriate texts for each subject in the first lecture of the subject. In all cases, the lecturer should be consulted before textbooks are purchased.

METHOD OF ASSESSMENT

Unless otherwise indicated, all 100-, 200-, 300- and 400-level subjects offered by the Department of Mathematics will be assessed by formal examinations, tests and assignments.

100-LEVEL

MATH101 MATHEMATICS IA

6 hrs per week
Assumed knowledge for the subject Mathematics IA is the 3 unit N.S.W. H.S.C. course.

(a) Calculus Methods (Functions, differentiation, integration and applications, partial differentiation).

(b) Algebra Methods (Complex numbers, matrices, determinants, systems of equations, i, j, k vectors).

(c) Numerical Analysis (Finite difference calculus, iterative techniques, elementary FORTRAN).

(d) Further Calculus Methods (Polar co-ordinates, introduction to sequences and series, first and second order differential equations).

RECOMMENDED READING

Purcell, E.J. *Calculus and Analytic Geometry*. 2nd ed. Appleton-Century-Crofts.

MATH102 MATHEMATICS IB

6 hrs per week

This subject is normally taken by students who intend to major in any branch of Mathematics. It presents the fundamentals as a background for further study at higher levels in Mathematics. The subject is recommended for intending teachers in Mathematics.

(a) Linear Algebra (Real numbers, functions, real n-dimensional space, bases, linear functions, matrices, applications to eigenvalues, difference equations, differential equations).

(b) Introduction to Analysis (Further properties of real numbers, sequences, series, limits, continuity, derivatives, Riemann integration, fundamental theorem of calculus).

(c) Introduction to Probability and Statistics (Discrete and continuous random variables, the binomial, normal and Poisson distributions with applications).

(d) Linear Programming (Inequalities, convex sets, physical problems, solution of L.P. problems by graphical means and the Simplex Method).

MATH102 MATHEMATICS IB (CONT'D)

RECOMMENDED READING

De Groot, M. *Probability and Statistics.* Addison-Wesley.
Giles, J.R. *Real Analysis - An Introductory Course.* Wiley.
Kreyszig, E. *Introductory Mathematical Statistics.* Wiley.
Lipschutz, S. *Finite Mathematics.* Schaum.
Moore, J.T. *Elementary Linear Algebra: The Viewpoint of Geometry.* McGraw-Hill.

CSCI101 COMPUTING SCIENCE I

3 lectures & 3 hrs laboratory per week

The objectives of this subject are to provide a foundation for subsequent computing science studies and to develop basic skills in problem solving. The content is as follows:

(a) Methods - simple algorithms, data representation, simple data structures, control structures, program structures, programming style.

(b) Tools - programming languages FORTRAN and COBOL; interactive languages BASIC and SIGMA; introduction to assembler concepts and computer organization. Basic debugging techniques.

(c) Laboratory Work - practical work in programming, debugging, algorithm design and computer studies will be conducted in the computing science laboratory. Our laboratory is equipped with an INTERDATA 7/32 mini-computer with 192k bytes of core memory, 10M bytes of disc storage and 7 VDU terminals.

TEXTBOOK

Meissner, L.P. *The Science of Computing.* Wadsworth Publishing Company, 1974.

200-LEVEL

MATH201 MATHEMATICS IIA

4 hrs per week

(a) Multivariate Calculus (Partial derivatives and their applications, multiple integrals).

(b) Fourier Series.

(c) Numerical Analysis (Numerical processes applied to functions, equations, differential equations, integration, matrices).

(d) Complex Variable (Complex functions, analytic functions, Laurent series, singularities, residues, contour integrals and applications).

RECOMMENDED READING

Conte, S.D. & De Boor, G. *Elementary Numerical Analysis.* McGraw-Hill.
Froberg, C.E. *Introduction to Numerical Analysis.* Addison-Wesley.
Kaplan, W. *Advanced Calculus.* Addison-Wesley.
Keane, A. & Senior, S.A. *Mathematical Methods.* Science Press.
McCracken, D.D. & Dorn, W.S. *Numerical Methods and FORTRAN Programming.* Wiley International.
Polya, G. & Latta, G. *Complex Variables.* Wiley.
Purcell, E.J. *Calculus and Analytic Geometry.* 2nd ed. Appleton-Century-Crofts.
Spiegel, M.R. *Advanced Calculus.* Schaum.
Spiegel, M.R. *Complex Variables.* Schaum.
Wylie, C.R. *Advanced Engineering Mathematics.* 4th ed. McGraw-Hill.

MATH211 MATHEMATICS IIB

4 hrs per week
(Essential for majors in Applied Mathematics)

(a) Vector Calculus (Vector functions of several variables, general integral theorems).

(b) Boundary Value Problems (Further work on the solution of differential equations, including series solutions, introduction to boundary value problems, eigenvalues and eigenfunctions, and applications).

(c) Matrix Analysis (Further properties of matrices eigenvalues, eigenvectors, quadratic forms).

(d) Dynamical Systems (System behaviour, transfer functions, convolution, auto-correlation, spectral analysis).

MATH211 MATHEMATICS IIB (CONT'D)

RECOMMENDED READING

Boyce, W.E. & Di Prima, R.C. *Elementary Differential Equations and Boundary Value Problems.* Wiley.
Davis, H.E. *Vector Analysis.* Allyn and Bacon.
Kaplan, W. *Operational Methods for Linear Systems.* Addison-Wesley.
Spiegel, M.R. *Vector Analysis.* Schaum.
Wylie, C.R. *Advanced Engineering Mathematics.* 4th ed. McGraw-Hill.

MATH202 MATHEMATICS IIS

2 hrs per week

Vector algebra, vector calculus, general integral theorems, matrix algebra, eigenvalues and eigenvectors, linear transformations, vector spaces.

RECOMMENDED READING

Davis, H.E. *Vector Analysis.* Allyn & Bacon.
Spiegel, M.R. *Vector Analysis.* Schaum.

MATH221 MATHEMATICS IIC

4 hrs per week
(Essential for majors in Pure Mathematics)

(a) Linear Analysis (Linear Algebra, eigenvalues and eigenvectors, diagonalization and canonical forms, inner product spaces, orthogonalization, application to Fourier series and linear differential equations).

(b) Multivariate Differential Analysis (Differentiable functions between R^n and R^m, the derivative as a linear function, the chain rule, implicit and inverse function theorems).

(c) Real Analysis (Sequences and series of functions, uniform convergence).

(d) Elementary theory of finite groups.

RECOMMENDED READING

Bartle, R.G. *The Elements of Real Analysis.* Wiley.
Kreider, D., Kuller, R., Ostberg, D., Perkins, F. *An Introduction to Linear Analysis.* Addison-Wesley.
Lang, S. *Analysis I.* Addison-Wesley.
Ledermann, W. *Introduction to the Theory of Finite Groups.* Oliver and Boyd.

MATH231 MATHEMATICS IID

4 hrs per week
(Essential for majors in Probability, Statistics, or Operations Research)

(a) Probability and Statistics (Sampling distributions, estimation, tests of hypotheses, regression, analysis of variance, design of experiments, and applications).

(b) Finite Mathematics and Combinatorial Analysis (A selection of topics from Graph Theory, networks, finite Markov chains, game theory, and combinatorics).

RECOMMENDED READING

Beckenbach, E.F. *Applied Combinatorial Analysis.* Wiley.
Busacker and Saaty. *Finite Graphs and Networks.* McGraw-Hill.
Kreyszig, E. *Introductory Mathematical Statistics.* Wiley.
Lin, C.L. *Introduction to Combinatorial Mathematics.* McGraw-Hill.
Pearl, M. *Matrix Theory and Finite Mathematics.* McGraw-Hill.
Walpole, R.E. & Meyers, R.H. *Probability and Statistics for Engineers and Scientists.* Macmillan.

MATH233 MATHEMATICS IIP

2 hrs per week

Probability, discrete and continuous distributions, random variables and expected values, sampling distributions, estimation, testing of hypotheses, regression analysis and analysis of variance.

RECOMMENDED READING

Hodges, J.L., Krech, D. & Crutchfield, R.S. *STATLAB: An Empirical Introduction to Statistics.* McGraw-Hill.
Kreyszig, E. *Introductory Mathematical Statistics.* Wiley.

MATH234 STATISTICAL METHODS

2 hrs per week (1 lecture & 1 tutorial)

Session 1: Frequency distributions, histograms, measures of central tendency and dispersion; Mean, Mode, Median, Range, Standard Deviation, Probability, Normal Distribution, Testing of Hypothesis, one sample case.

Session 2: Testing of Hypothesis: Two Sample Test, ψ^2 test of independence, Non-Parametric Tests: Mann-Whitney U test, sign test, Wilcoxon matched pairs signed rank test, Power of a test, Regression and Correlation, one way Analysis of Variance.

TEXTBOOK

Runyon, R. & Haber, P. *Fundamentals of Behavioural Statistics.* Addison-Wesley.

MATH281 MATHEMATICS IIE

5 hrs per week

(a) Matrix algebra, eigenvalues, eigenvectors, vector algebra, vector calculus, general integral theorems.

(b) Partial differentiation, multiple integrals, Fourier series, special functions, complex variable.

(c) Further differential equations, series solutions, Laplace and other transforms, introduction to boundary value problems.

RECOMMENDED READING

Keane, A. & Senior, S.A. *Mathematical Methods.* (Combined Edition). Science Press.

MATH282 MATHEMATICS IIM

4 hrs per week

Partial differentiation, multiple integrals, Fourier series, further work in the solution of differential equations of the first and second order.

RECOMMENDED READING

Keane, A. & Senior, S.A. *Mathematical Methods.* Science Press.

MATH284 MATHEMATICS IIA PART 1

3 hrs per week

(a) Multivariate Calculus (Partial derivatives and their applications, multiple integrals).

(b) Fourier Series.

(c) Complex Variable (Complex functions, analytic functions, Laurent series, singularities, residues, contour integrals and applications).

RECOMMENDED READING

Kaplan, W. *Advanced Calculus.* Addison-Wesley.
Keane, A. & Senior, S.A. *Mathematical Methods.* Science Press.
Polya, G. & Latta, G. *Complex Variables.* Wiley.
Purcell, E.J. *Calculus and Analytic Geometry.* 2nd ed. Appleton-Century-Crofts.
Spiegel, M.R. *Advanced Calculus.* Schaum.
Spiegel, M.R. *Complex Variables.* Schaum.
Wylie, C.R. *Advanced Engineering Mathematics.* 4th ed. McGraw-Hill.

MATH285 MATHEMATICS IIA PART 2

1 hr per week

Successful completion of both Mathematics IIA Part 1 and Mathematics IIA Part 2 will give a student equivalent standing of having passed the subject Mathematics IIA.

Numerical Analysis (Numerical processes applied to functions, equations, differential equations, integration, matrices).

RECOMMENDED READING

Conte, S.D. & De Boor, G. *Elementary Numerical Analysis.* McGraw-Hill.
Froberg, C.E. *Introduction to Numerical Analysis.* Addison-Wesley.
McCracken, D.D. & Dorn, W.S. *Numerical Methods and FORTRAN Programming.* Wiley International.

CSCI201 COMPUTING SCIENCE II

3 lectures & 1 tutorial per week

The objectives of this subject are to develop problem solving skills and programming styles so that non-trivial problems of moderate size can be solved quickly, accurately and confidently. The content is as follows:

(a) Methods - Algorithms, recursive algorithms, dynamic information structures, language structures and compilers.

(b) Tools - Programming Language PASCAL; Assembly language programming; Basic operating system concepts; Introduction to file structures; Debugging techniques and programming style.

TEXTBOOK

Wirth, N. *Algorithms & Data Structures - Programs.* Prentice-Hall, 1976.

RECOMMENDED READING

Kernighan, B.W. & Plauger, P.J. *The Elements of Programming Style.* McGraw-Hill, 1974.

CSCI241 COMPUTING METHODS

2 lectures & 1 hr laboratory per week

Objective: to provide basic programming and problem solving skills with emphasis on applications to disciplines other than computing science and to provide a general introduction to computers and computing science.

Content: introduction to computers, their history, uses and applications. Simple algorithms and problem solving techniques. Writing of programs in programming language BASIC. Ability to read FORTRAN programs. Use of program packages, and their applications.

TEXTBOOK

Dorf, R.C. *Computers and Man.* Boyd & Fraser, 1974.

RECOMMENDED READING

Dorn, W.S. & McCracken, D.D. *Introductory Finite Mathematics with Computing.* John Wiley, 1976.

300-LEVEL

MATH301 MATHEMATICS IIIA

4 hrs per week

(a) Special Functions (Error, gamma, beta, Bessel, hypergeometric, Legendre, Laguerre and Hermite functions).

(b) Integral Transforms (Laplace, Fourier, Hankel and Mellin transforms).

(c) Conformal Transformations (Elementary transformations, Schwarz-Christoffel transformation, and applications).

(d) Variational Calculus (Fundamentals).

RECOMMENDED READING

Elsgolc, L.E. *Calculus of Variations.* Pergamon.
Keane, A. *Integral Transforms.* Science Press, Sydney.
Reichel, A. *Special Functions.* Science Press, Sydney.
Spiegel, M.R. *Complex Variables.* Schaum.

MATH302 MATHEMATICS IIIB

4 hrs per week

(a) Ordinary Differential Equations (The study of the existence, uniqueness and stability of solutions to linear and non-linear ordinary differential equations and applications).

(b) Partial Differential Equations (First order linear and some non-linear partial differential equations and second order partial differential equations of Mathematical Physics).

RECOMMENDED READING

Boyce, W.E. & Di Prima, R.C. *Elementary Differential Equations and Boundary Value Problems.* 2nd ed. Wiley.
Dennemeyer, R. *Introduction to Partial Differential Equations and Boundary Value Problems.* McGraw-Hill.
Epstein, B. *Partial Differential Equations.* McGraw-Hill.
Greenspan, D. *Introduction to Partial Differential Equations.* McGraw-Hill.
Hochstadt, H. *Differential Equations.* Holt, Rinehart & Winston.
Sneddon, I. *Elements of Partial Differential Equations.* McGraw-Hill.

MATH303 MATHEMATICS IIIC

4 hrs per week

Numerical Analysis (Recurrence relations, iterative methods, least squares, Gaussian elimination, LR decomposition, eigenvalues and eigenvectors of matrices, LR and QR algorithms, multiple integrals, boundary value problems).

RECOMMENDED READING

Dahlquist, G. & Björck, Å. *Numerical Methods.* Trans. Anderson, N. Prentice-Hall.
Fox, L. *Numerical Solution of Ordinary and Partial Differential Equations.* Pergamon.
Froberg, C. *Introduction to Numerical Analysis.* Addison-Wesley.
Householder, A. *Theory of Matrices in Numerical Analysis.* Blaisdell.
Varga, R.S. *Matrix Iterative Analysis.* Prentice-Hall.
Wilkinson, J.W. *The Algebraic Eigenvalue Problem.* Oxford University Press.

MATH311 MATHEMATICS IIID

4 hrs per week
(For majors in Applied Mathematics)

(a) Ocean Dynamics (Properties of water waves and ocean currents).

(b) Continuum Mechanics (Elementary continuum mechanics with selected problems from elasticity theory and fluid dynamics).

RECOMMENDED READING

Ippen, A. *Estuary and Coastline Hydrodynamics.* McGraw-Hill.
Krauss, W. *Dynamics of the Homogeneous and Quasihomogeneous Ocean.* Gebruder Borntraeger, Berlin.
Neumann, G. *Ocean Currents.* Elsevier.

MATH321 MATHEMATICS IIIE

4 hrs per week
(For majors in Pure Mathematics)

(a) Abstract Algebra (Algebraic structures such as groups, rings, fields, Boolean algebras and their quotient structures, embedding of integral domains, construction of the reals, introduction to Galois theory and number theory).

(b) Logic and Set Theory (Axiomatic, propositional, and predicate calculus; axiomatic set theory, cardinal and ordinal numbers, the axiom of choice, Zorn's Lemma and applications).

RECOMMENDED READING

Dean, R.A. *Elements of Abstract Algebra.*
Griffin, H. *Elementary Theory of Numbers.* McGraw-Hill.
Herstein, I.N. *Topics in Algebra.* Ginn Blaisdell.
Mendelson, E. *Introduction to Mathematical Logic.* Van Nostrand.
Paley, H. & Weichsel, P.M. *A First Course in Abstract Algebra.* Holt.

MATH322 MATHEMATICS IIIF

4 hrs per week
(For majors in Pure Mathematics)

(a) Functional Analysis (Hilbert and Banach spaces, linear operators, dual spaces, application to (some of) Fourier series, differential and integral equations, quadrature formulae, orthogonal functions and expansions).

(b) Topology (Elementary general topology, open and closed sets, continuity, applications to differential and integral equations, approximation theory).

(c) Complex Analysis (Further topics in complex analysis including properties of entire and meromorphic functions).

RECOMMENDED READING

Ahlfors, L. *Complex Analysis.* McGraw-Hill.
Levinson, N., Redheffer, R.M. *Complex Variable.* Holden Day.
Simmons, G.F. *Introduction to Topology and Modern Analysis.* McGraw-Hill.

MATH331 MATHEMATICS IIIG

4 hrs per week
(For majors in Probability, Statistics and Operations Research)

(a) Operations Research (Linear, non-linear and dynamic programming, queueing theory, theory of games, simulation).

(b) Stochastic Processes (Probability measures, random variables, branching processes, renewal processes, Markov chains, tests of significance, sequential analysis).

RECOMMENDED READING

Bhat, U.N. *Elements of Applied Stochastic Processes.* Wiley.
Hillier, R.S. & Lieberman, G.J. *Introduction to Operations Research.* Holden-Day.
Karlin, S.A. *First Course in Stochastic Processes.* Academic Press.
Pollard, J. *Mathematical Models for the Growth of Human Population.* C.U.P.
Sasieni, M., Yaspan, A. & Friedman, L. *Operations Research.* Wiley, Toppan.

MATH334 DESIGN AND ANALYSIS

2 hrs per week (1 lecture & 1 tutorial)

Topics will include the structure and planning of experiments; one way analysis of variance; two-way analysis of variance; three way analysis of variance; multiple comparison procedures; non-parametric analysis of variance -- the Kruskal-Wallis test; analysis of co-variance; regression analysis; multiple correlation and multiple regression; correlations involving ranks and dichotomous data; and introduction to factor analysis.

RECOMMENDED READING

Ferguson, G.A. *Statistical Analysis on Psychology and Education.* 3rd ed. McGraw-Hill, N.Y., 1972.

MATH351 OCEAN DYNAMICS

4 hrs per week
This subject has been approved as part of a coherent study at 300-level when taken together with GEOG311 Coastal Geomorphology.

Special Functions (Error, gamma, beta, Bessel, hypergeometric, Legendre, Laguerre and Hermite functions).

Integral Transforms (Laplace, Fourier, Hankel and Mellin transforms).

Edge waves, tidal dynamics, estuary and coastline dynamics, introduction to ocean currents.

RECOMMENDED READING

Ippen, A. *Estuary and Coastline Hydrodynamics.* McGraw-Hill.
Keane, A. *Integral Transforms.* Science Press, Sydney.
Krauss, W. *Dynamics of the Homogeneous and Quasihomogeneous Ocean.* Gebruder Borntraeger, Berlin.
Neumann, G. *Ocean Currents.* Elsevier.
Reichel, A. *Special Functions.* Science Press, Sydney.

CSCI301 COMPUTING SCIENCE IIIA

3 lectures & 1 tutorial per week

(a) Computer Hardware (The structure of computers, processor architecture, instruction sets, arithmetic unit).

(b) Advanced Data Structures (Trees, digraphs, arrays, list structures, files).

TEXTBOOKS

Bell, C.G. & Newell, A. *Computer Structures: Readings and Examples.* McGraw-Hill, 1971.
Berztiss, A.T. *Data Structures: Theory and Practice.* 2nd ed. Academic Press, 1975.

CSCI302 COMPUTING SCIENCE IIIB

3 lectures & 1 tutorial per week

Operating Systems (a study of the algorithms used by operating systems: sequential and concurrent processes, synchronization of independent processes, memory management, scheduling algorithms, resource allocation, file systems).

TEXTBOOK

Madnick, S.E. & Donovan, J.J. *Operating Systems.* McGraw-Hill, 1974.

400-LEVEL

MATH401 MATHEMATICS IV (HONOURS)

A student taking Honours would normally take a selection of topics at 4th year level (subject to approval by the Chairman of the Department) and a minor thesis, under the supervision of an appropriate member of staff.

The subject may include topics from: Numerical Analysis; Ocean Dynamics; Nuclear Reactor Theory; Computing Science; Statistics; Probability; Operations Research; Functional Analysis; Measure Theory; Abstract Algebra; Logic; Set Theory; Topology; Perturbation Theory; Matrix Analysis; Continuum Mechanics; Non-linear Partial Differential Equations; Mathematical Methods; or Classical Analysis.

RECOMMENDED READING

See Lecturer concerned.

MATH411 MATHEMATICS HONOURS SEMINAR

The Honours Seminar, which is available as a separate subject to candidates for MSc or DipMath only, requires the undertaking of a reading course in the appropriate field of study and the presentation of a substantial essay together with a Seminar to the Department of Mathematics.

The method of assessment of the Mathematics Honours Seminar will be on the quality of the essay and of the Seminar and will be made by the relevant departmental staff.

COHERENT STUDIES IN MATHEMATICS

Either of the following methods may be used by Mathematics students to declare the 24 credit points of coherent study at 300-level referred to in the Bachelor Degree Requirements 16.2 and 20.3.2:

(a) By the successful completion of any 24 credit points from 300-level Mathematics subjects; or

(b) By the successful completion of both: MATH351 Ocean Dynamics, and GEOG313 Coastal Geomorphology.

SUGGESTED UNDERGRADUATE DEGREE PROGRAMMES

The following information is intended simply as a guideline to the student in selecting suitable supplementary subjects to do to make a reasonable pattern for Mathematics degrees in the various fields of Mathematics.

The student should be aware that the recommendations are in some instances vague to the extent that he still must be careful in the selection of supplementary subjects when trying to fulfil the requirements of a BSc under the degree regulations relating to Schedule E-1.

It is intended that all students should still consult with the Mathematics Department and Faculty advisors before committing themselves completely to any particular pattern, whether outlined below or not.

It is emphasised that the following programmes are based on the usual 48 credit points per year, totalling 144 credit points over 3 years.

In the following, unless otherwise indicated, Mathematics, Ocean Dynamics and Computing Science subjects are each 12 credit points.

Notes for Students who are on N.S.W. Teacher Education Mathematics Scholarships:

1. The minimum requirement for these students is 60 credit points of Mathematics, including a coherent study at 300-level, although a student is encouraged to do a Science degree in Mathematics (through Schedule E-1), which requires 84 credit points of Mathematics as a minimum.

2. These students should get *written* approval for their programme from the Education Department's advisory office before embarking on any programme in mathematical studies.

PROGRAMME 1: APPLIED MATHEMATICS (GENERAL)

First Year	Mathematics IA and IB (and 24 other credit points)
Second Year	Mathematics IIA, IIB (at least 1 other Mathematics subject, and 12 other credit points)
Third Year	Mathematics IIIA, IIIC, IIID (and 1 other Mathematics subject, e.g. Mathematics IIIB, IIIF or IIIG)

PROGRAMME 2: NUMERICAL ANALYSIS

Basic Course:

First Year Mathematics IA

Second Year Mathematics IIA and at least one of Mathematics IIB or IIC (or IIS - 6 credit points)

Third Year Mathematics IIIA and IIIC

Supplementary Subjects:
For a Mathematics major it is recommended that the complete course should also include Computing Science I, Computing Science II, Mathematics IB and at least one of Mathematics IIIB, or Mathematics IIID. If Mathematics IB is taken in First Year, the sequence Mathematics IID, Mathematics IIIG is also possible.

PROGRAMME 3: OCEAN DYNAMICS

(a) Mathematical

First Year Mathematics IA, IB

Second Year Mathematics IIA, IIB, IID

Third Year Mathematics IIIA, IIIC, IIID and possibly either IIIB or IIIG

Alternative Third Year Ocean Dynamics, IIIB, IIIC, IIIG

Supporting Programmes: 36 credit points chosen from
100-level Physics, Geography, Geology
200-level GEOG212 Biogeography (8 credit points); GEOL211 Basin Analysis and Oceanography (6 credit points)
300-level GEOG313 Coastal Geomorphology (12 credit points)

(b) Mathematics and Coastal Dynamics

First Year Mathematics IA, GEOG112 and 102, GEOL101 and 102, BIOL101

Second Year Mathematics IIA, IIB, IIP (6 credit points), GEOG212, GEOL211

Third Year Mathematics IIIC, Ocean Dynamics,GEOG313, GEOG311 plus 4 credit points which could be achieved by replacing Mathematics IIP with Mathematics IB

PROGRAMME 4: DECISION SCIENCES

First Year Mathematics IA and IB (and 24 other credit points)

Second Year Mathematics IIA, IID (and at least 1 other Mathematics subject, and 12 other credit points)

Third Year Mathematics IIIG (and 3 other Mathematics subjects, e.g. Mathematics IIIA, IIIB and IIIC)

PROGRAMME 5: PURE MATHEMATICS (GENERAL)

First Year Mathematics IA and IB (and 24 other credit points)

Second Year Mathematics IIA, IIC (and at least 1 other Mathematics subject and 12 other credit points)

Third Year Mathematics IIIE, IIIF (and 2 other Mathematics subjects, one possibly being Mathematics IIIB)

PROGRAMME 6: INTENDING HIGH SCHOOL TEACHERS IN MATHEMATICS

First Year Mathematics IA and IB, and possibly Computing Science I (and 24 or 12 other credit points, depending on exclusion or inclusion of Computing Science I)

Second Year 4 second year Mathematics subjects

Alternative Second Year 3 second year Mathematics subjects (and 12 other credit points)

Third Year 4 third year Mathematics subjects

PROGRAMME 7: INTENDING HIGH SCHOOL TEACHERS IN MATHEMATICS AND SCIENCE

(a)

First Year	Mathematics IA, and 36 credit points in Science subjects
Second Year	Mathematics IIA and Mathematics IIB (and 24 other credit points in Science subjects)
Third Year	2 third year Mathematics subjects (and 24 other credit points in Science subjects)

(b)

First Year	Mathematics IA, IB (and 24 credit points in Science subjects)
Second Year	Mathematics IIA and either Mathematics IIB or IIC or IID (and 24 other credit points in Science subjects)
Third Year	2 third year Mathematics subjects (and 24 other credit points in Science subjects)

Notes on Programme 7

(i) N.S.W. Teacher Education Scholarship students must be on a Mathematics scholarship to take either of programme (a) or (b);

(ii) Students in Programme 7(a) or (b) and in a Science degree will need to take out their degree through the requirement on Schedule E-2.

PROGRAMME 8: COMPUTING SCIENCE

First Year	Computing Science I and Mathematics IA (and 24 other credit points)
Second Year	Computing Science II (12 credit points of Mathematics, and 24 other credit points)
Third Year	Computing Science IIIA, IIIB (and 24 other credit points)

PROGRAMME 9: LOGIC (AND PHILOSOPHY)

(a)

First Year	Mathematics IA and IB; PHIL112 Logic A (6 credit points) and 18 other credit points at least 12 of which should be in Philosophy
Second Year	Mathematics IIA and IIC; PHIL221 General History of Logic and PHIL222 Set Theory 222 (8 credit points each) and 8 other credit points (e.g. PHIL211 or 212)
Third Year	Mathematics IIIE; PHIL351 Formal Logic I and PHIL352 Formal Logic II (12 credit points each) and 12 other credit points of Mathematics (such as Mathematics IIIF)

Note: A student taking this programme may only proceed to an Arts degree.

(b)

First Year	Mathematics IA and IB, PHIL112 Logic A (6 credit points) and 18 other credit points in Science and Mathematics
Second Year	Mathematics IIA and IIC; PHIL221 General History of Logic and PHIL222 Set Theory 222 (8 credit points each) and 8 other credit points in Science and Mathematics
Third Year	Mathematics IIIE; PHIL351 Formal Logic I (12 credit points) and 24 other credit points of Mathematics (probably including Mathematics IIIF)

MECHANICAL ENGINEERING

SCHEDULE ENTRIES

Refer to Schedule C for approved details of the subjects described in this section. Subjects which also appear in other schedules are:

Subject	*Schedule*
MECH363	D
MECH464	D

100-LEVEL

MECH101 STATICS

28 hrs lectures; 14 hrs tutorials
Assessment: One 2 hour examination at end of course. Other short examinations and tutorial performances will be incorporated in the final assessment

Two dimensional force systems; laws of equilibrium; concurrent and non-concurrent forces; funicular polygon; statics applied to rigid bars; statics of pin-jointed frames, analytical and graphical treatment; concepts of shear force, axial force and bending moment; simple states of stress; three-dimensional statics; composition and resolution of forces; general laws of equilibrium.

TEXTBOOK

Meriam, J.L. *Statics.* 2nd ed. (S.I. version), Wiley.

RECOMMENDED READING

Atkins, K.J. and Darvall, P. LeP. *Mechanics and Structures - Worked Problems, Tests and Solutions.* Science Press.
Atkins, K.J., Darvall, P. LeP. & McMahon, T.A. *Mechanics and Structures.* Science Press.
Beer, F.P. and Johnston, E.R. *Vector Mechanics for Engineers - Statics.* McGraw-Hill.

MECH103 STATICS

All details, with the exception of the session offered, are identical with MECH101 Statics.

MECH102 DYNAMICS

28 hrs lectures; 14 hrs tutorials
Assessment: One 2 hour examination at end of course. Other short examinations and tutorial performances will be incorporated in the final assessment.

Kinematics of a particle. Kinetics of a particle; equations of motion; dynamic equilibrium; work and energy; impulse and momentum. Systems of particles. Introduction to rigid body dynamics.

TEXTBOOK

Meriam, J.L. *Dynamics.* 2nd ed. (S.I. version), Wiley.

RECOMMENDED READING

Beer, F.P. and Johnston, E.R. *Vector Mechanics for Engineers - Dynamics.* McGraw-Hill.
Hibbeler, R.C. *Engineering Mechanics: Dynamics.* Collier-Macmillan.

MECH121 ENGINEERING DRAWING AND GRAPHICS

14 hrs lectures; 28 hrs tutorials
Assessment: Parts (a) and (b) by class examinations. Part (c) by 2 hour examination at end of course

(a) Descriptive Geometry.

Fundamental principles of projection; visibility; applications of the fundamental principles of orthographic projection including true length of a line segment, bearing and grade of a line, point view of a line, edge view of a plane surface and true shape of a plane surface; angle between plane surfaces; angle between intersecting and skew lines; angle between a line and a plane.

MECH121 ENGINEERING DRAWING AND GRAPHICS(CONT'D)

(b) Engineering Drawing and Design.

Introduction and standards information; geometrical constructions; the production of a mechanical drawing; pictorial drawing (isometric and oblique parallel projection); limits and fits; drawing analysis; elementary ideas of design.

(c) Graphical Computation.

Graphical presentation of data including nomograms; graphical integration; graphical differentiation; empirical equations including semi-log and log-log plots.

TEXTBOOKS

AS CZI - 1976 *Australian Standard Engineering Drawing Practice.* (S.I. Units), I.E. Aust., 1976.
Boundy, A.W. *Engineering Drawing.* McGraw-Hill.

RECOMMENDED READING

Beakley, G.C. and Chilton, E.G. *Introduction to Engineering Design and Graphics.* Collier-Macmillan.
Levens, A.S. *Graphics - Analysis and Conceptual Design.* 2nd ed. Wiley.
Svensson, N.L. *Introduction to Engineering Design.* New South Wales University Press Limited.

MECH122 DESIGN 1

14 hrs lectures; 28 hrs tutorials
Assessment: Parts (a) and (b) by class examinations. Part (c) by design assignments and a creative design project.

(a) Descriptive Geometry.

Developments including prisms, cylinders, pyramids, cones and transition pieces; intersection of solids bounded by plane surfaces; intersection of conics.

(b) Engineering Drawing.

Auxiliary views; advanced exercises in drawing analysis; advanced exercises in orthographic projection.

(c) Design.

The phases of design; design processes; models; design economics; decision processes; creative design.

TEXTBOOKS

AS CZI - 1976 *Australian Standard Engineering Drawing Practice.* (S.I. Units), I.E. Aust., 1976.
Boundy, A.W. *Engineering Drawing.* McGraw-Hill.

RECOMMENDED READING

Beakley, G.C. & Chilton, E.G. *Introduction to Engineering Design and Graphics.* Collier-Macmillan.
Levens, A.S. *Graphics - Analysis and Conceptual Design.* 2nd ed. Wiley.
Svensson, N.L. *Introduction to Engineering Design.* New South Wales University Press Limited.

MECH131 ENGINEERING PROCESSES AND PRACTICE

42 hrs lectures and tutorials
Assessment: Assignments during session and one 2 hour examination at end of session.

Workshop practices. Manufacturing processes. Quality control. Corrosion protection. Safety procedures. Environmental aspects and ethical considerations in the practice of engineering.

RECOMMENDED READING

To be advised during course.

MECH198 INDUSTRIAL EXPERIENCE I
MECH199 INDUSTRIAL EXPERIENCE II
MECH298 INDUSTRIAL EXPERIENCE III
MECH299 INDUSTRIAL EXPERIENCE IV
MECH398 INDUSTRIAL EXPERIENCE V
MECH399 INDUSTRIAL EXPERIENCE VI

For students in full-time employment who are enrolled in a part-time programme, each year of appropriate employment will be credited as one elective with a maximum accreditation of six electives for the course.

In the last week of Session 2 of each stage of the course students must submit a report on their

industrial activities during the foregoing year. The report should be approximately 1500 words long.

Accreditation is granted if the report is passed as satisfactory by the Chairman of Department.

200-LEVEL

MECH201 MECHANICS OF SOLIDS I

28 hrs lectures, 14 hrs tutorials
Assessment: One two hour examination at end of course. Other short examinations and tutorials will be incorporated in the final assessment.

Introduction to stress and strain; elastic stress-strain relations; non-linear deformation; statically indeterminate problems; bending stresses; deflection of beams; shear stresses; torsion of circular shaft; closely coiled spring; stresses and strains at a point; combined stresses; Mohr's circle of stress; strain rosette.

TEXTBOOK

Hall, A.S. *An introduction to the mechanics of solids.* Wiley International.

RECOMMENDED READING

Shanley, F.R. *The mechanics of materials.* McGraw-Hill.
Shames, I.H. *Introduction to Solid Mechanics.* Prentice-Hall.
Cernica, J.N. *Strength of Materials.* Holt, Rinehart & Winston.
Higdon, A. et al. *Mechanics of Materials.* Wiley.

MECH202 ENGINEERING MATERIALS I

28 hrs lectures, 14 hrs tutorials
Assessment: One two hour examination at end of course. Other short examinations and tutorials will be incorporated in the final assessment.

Structure and properties of crystalline materials; defects; elastic and plastic deformation; dislocations; fracture, creep and fatigue; hardness, creep, fatigue and impact test; structure and properties of amorphous materials; selection of materials based on engineering criteria; new developments in materials.

RECOMMENDED READING

Jastrzebski, Z.D. *Nature and Properties of Engineering Materials.* 2nd ed. S.I. Version, Wiley.
Keyser, C.A. *Materials Science in Engineering.* Merrill.
Wulff, J. ed. *Structure and properties of materials. Vols. (1-4).* Wiley.

MECH213 MECHANICAL ENGINEERING DESIGN I

42 hrs lectures and Drawing Office
Assessment: No formal examination. Students are assessed on the basis of assignments given in Drawing Office classes

Machinery: Permissible stresses; probability of failure and safety factors. Design of machine elements.

TEXTBOOK

Faires, V.M. *Design of Machine Elements.* Macmillan.

RECOMMENDED READING

To be advised during course.

MECH214 STRUCTURAL DESIGN FOR MECHANICAL ENGINEERS

28 hrs lectures, 14 hrs tutorials
Assessment: No formal examination. Students are assessed on the basis of drawing office assignments.

Basic design of steel structures and of simple elements in reinforced concrete using codes of practice.

MECH214 STRUCTURAL DESIGN FOR MECHANICAL ENGINEERS(CONT'D)

TEXTBOOKS

Gorenc, B.E. and Tinyou, R. *Steel Designer's Handbook.* NSWUP, 1976.
BHP-AIS. *Hot Rolled Carbon Steel Sections and Plates.* BHP Co. Ltd.
SAA Steel structures code. AS 1250, 1975.
SAA Code for Welding in Buildings. AS 1554 Pt I Manual Welding 1974.
SAA Code for Concrete in Buildings. AS 1480, 1975.

RECOMMENDED READING

Ferguson, P.M. *Reinforced concrete fundamentals.* John Wiley & Sons.
Lay, M.G. *Source book for the Australian Steel Structures Code AS1250.* AICE.

MECH223 ENGINEERING DYNAMICS

28 hrs lectures; 14 hrs tutorials
Assessment: One 2 hour examination at the end of the course. Other short examinations and tutorial performances will be incorporated in the final assessment.

Kinematics of rigid bodies. Dynamics of rigid bodies in plane motion; moments of inertia, equations of motion, dynamic equilibrium; momentum and impulse, energy analysis. Dynamics of simple mechanisms. Introduction to mechanical vibrations.

TEXTBOOKS

Hirschhorn, J. *Dynamics of Machinery.* Nelson.
Meriam, J.L. *Dynamics.* 2nd Ed. S.I. Version. Wiley.

RECOMMENDED READING

Beer, F.P. & Johnston, E.R. *Vector Mechanics For Engineers-Dynamics.* 3rd Ed. McGraw-Hill.
Church, A.H. *Mechanical Vibrations.* Wiley.

MECH251 EXPERIMENTAL ENGINEERING I

12 hrs lectures; 30 hrs tutorials and laboratory
Assessment: No formal examination. Assessment will be based on laboratory reports all of which are compulsory.

Measuring techniques as applied to temperature, pressure, stress, displacement, velocity, acceleration and fluid flow, under static and dynamic conditions. Sensing elements. Recording instruments and associated equipment. Calibration of instruments. Analyses of experimental results - errors and curve fitting techniques.

RECOMMENDED READING

To be advised during the course.

MECH231 FLUID MECHANICS I

28 hrs lectures; 14 hrs tutorials
Assessment: One 2 hour examination will be held at the end of the course. Short tests may be held during the course and will count towards the final result

Review of physical properties of fluids; fluid statics and manometry; continuity and momentum equations; rotation and vorticity; equations of motion; steady flow energy equation; fluid flow measurements.

TEXTBOOK

Olson, R.M. *Engineering Fluid Mechanics.* 3rd ed. Intext.

RECOMMENDED READING

Streeter, V.L. *Fluid Mechanics.* McGraw-Hill.

MECH224 SYSTEM DYNAMICS

28 hrs lectures; 14 hrs tutorials
Assessment: One 2 hour examination at the end of the course. Other short examinations and tutorial performances will be incorporated in the final assessment.

System classification - ordinary and partial differential equations that commonly occur in engineering problems. Circuit diagrams for mechanical systems; "through" and "across" variables; equilibrium analysis; block diagrams; reduction of equations; concept of state; free and forced response; system functions; stability; sinusoidal response; Fourier Series and

MECH224 SYSTEM DYNAMICS(CONT'D)

Integral; Laplace Transform applied to linear systems.

TEXTBOOK

Cannon, R.H. *Dynamics of Physical Systems.* McGraw-Hill.

RECOMMENDED READING

Churchill, R.V. *Operational Mathematics.* McGraw-Hill.
Haberman, C.M. *Engineering Systems Analysis.* Merrill.
Meriam, J.L. *Dynamics.* Wiley.

MECH241 THERMODYNAMICS I

28 hrs lectures; 14 hrs tutorials
Assessment: One 2 hour examination at the end of the course. Other short examinations and tutorial performances will be incorporated in the final assessment.

Concepts and definitions. Energy transfer and the first law. Properties and state of a simple substance. Control-mass and control-volume analysis of thermodynamic systems. Quantum and probability considerations and the concept of entropy. The second law and corollaries. Application.

TEXTBOOK

Holman, J.P. *Thermodynamics.* 2nd ed. McGraw-Hill.

RECOMMENDED READING

Reynolds, W.C. *Thermodynamics.* McGraw-Hill.
Sonntag, R.E. & Van Wylen, G.J. *Introduction to Thermodynamics.* Wiley.
Wark, K. *Thermodynamics.* McGraw-Hill.

MECH 281 ENVIRONMENTAL ENGINEERING I

28 hrs lectures; 14 hrs tutorials
Assessment: One 2 hour examination at end of course. Five compulsory assignments have to be submitted during the course.

An introduction to the following topics:

(a) The environmental crisis.

Air pollution	:	its causes and control.
Water pollution	:	its causes and control.
Noise pollution	:	its causes and control.
Solid-waste	:	its generation and disposal.

(b) The energy crisis.

RECOMMENDED READING

Hammer, M.J. *Water and Waste-Water Technology.* John Wiley & Sons.
Mantell, C.L. *Solid Wastes: Origin, Collection, Processing and Disposal.* John Wiley & Sons.
Perkins, H.C. *Air Pollution.* McGraw-Hill.
Webb, J.D. ed. *Noise Control in Industry.* Anchor Press Ltd.

300-LEVEL

MECH301 MECHANICS OF SOLIDS II

28 hrs lectures, 14 hrs tutorials
Assessment: One 2 hour examination at end of course. Other short examinations and tutorials will be incorporated in the final assessment

Bending of curved beams; statically indeterminate beams; plastic analysis methods; strain energy methods; struts; deformation symmetrical about an axis; residual stresses; dynamic loading; fatigue; theories of failure.

RECOMMENDED READING

Higdon, A. *Mechanics of Materials.* Wiley.
Timoshenko, S. *Strength of Materials.* Van Nostrand.
Timoshenko & Gere. *Mechanics of Materials.* Van Nostrand.

MECH313 MECHANICAL ENGINEERING DESIGN II

42 hrs lectures and Drawing Office
Assessment: No formal examination. Students are assessed on the basis of assignments given in the Drawing Office classes

Crane and hoist design; Application of the design of machine elements to mechanical engineering systems.

TEXTBOOK

Faires, V.M. *Design of Machine Elements.* Macmillan.

RECOMMENDED READING

To be advised during course.

MECH361 CONTROL SYSTEMS I

28 hrs lectures; 14 hrs tutorials
Assessment: One 2 hour paper at end of course

Principles and techniques applicable to the analysis and design of feedback control systems with particular application to industrial processes. Modelling of control systems. Basic control actions, time domain and frequency domain analysis of linear systems, stability analysis, Nyquist Criterion, Bode Diagrams, Nichols Charts. Analogue computers.

TEXTBOOK

Ogata, K. *Modern Control Engineering.* Prentice-Hall.

RECOMMENDED READING

Dransfield, P. *Engineering Systems and Automatic Control.* Prentice-Hall.
Harrison, H.L. & Bolinger, J.G. *Introduction to Automatic Controls.* 2nd ed. International.
Kuo, B.C. *Automatic Control Systems.* Prentice-Hall.
Raven, F.H. *Automatic Control Engineering.* 2nd ed. McGraw-Hill.

MECH362 CONTROL SYSTEMS II

28 hrs lectures; 14 hrs tutorials
Assessment: One 2 hour paper at end of course

Further methods applied to the analysis and design of feedback control systems. Root locus analysis. State space analysis of linear systems. Design and compensation techniques. Introduction to non-linear systems and techniques of analysis. Liapunov stability analysis. Introduction to optimal control theory.

TEXTBOOK

Ogata, K. *Modern Control Engineering.* Prentice-Hall.

RECOMMENDED READING

De Russo, P.M. et al. *State Variables for Engineers.* Wiley.
Gupta, S.C. & Hasdorf, L. *Fundamentals of Automatic Control.* Wiley.
Kuo, B.C. *Automatic Control Engineering.* Prentice-Hall.

MECH353 EXPERIMENTAL ENGINEERING II

14 hrs lectures; 28 hrs laboratory
Assessment: No formal examinations. Assessment will be based on laboratory reports all of which are compulsory

Testing of reciprocating and rotodynamic machine; refrigeration plant, nozzles; heat exchangers.

RECOMMENDED READING

To be advised during course.

MECH332 FLUID MECHANICS II

28 hrs lectures; 14 hrs tutorials
Assessment: One 2 hour examination at the end of the course. Other short examinations and tutorial performances will be incorporated in the final assessment

Dimensional analysis. Dynamic similarity. Modelling. Boundary layer theory. Dynamic drag and lift. Flow of real fluids in ducts. Pipe networks. Theory of turbomachinery. Performance characteristics.

MECH332 FLUID MECHANICS II (CONT'D)

TEXTBOOK

Olson, R.M. *Engineering Fluid Mechanics.* 3rd ed. Intext.

RECOMMENDED READING

Shepherd, D.G. *Elements of Fluid Mechanics.* Harcourt Brace & World.

MECH333 FLUID MECHANICS III

28 hrs lectures; 14 hrs tutorials
Assessment: One 2 hour paper at end of course

One dimensional compressible fluid flow. Isentropic variable area flow. Nozzles and diffusers. Normal and oblique shocks. Effects of friction and heat transfer. Shapiro-Hawthorne generalized analysis. Boundary layer theory. Equations of motion. Exact solutions for laminar flow. Turbulent flow and parameters. Universal velocity distribution. Resistance formulae for ducts. Boundary layers with pressure gradient. Separation and vortex formation. Boundary layer control. Drag and pressure distribution relationships for bluff bodies.

TEXTBOOK

Olson, R.M. *Engineering Fluid Mechanics.* 3rd ed. Intext.

RECOMMENDED READING

Schlichting, H. & Kestin, J. *Boundary Layer Theory.* McGraw-Hill.
Shapiro, A.H. *The Dynamics and Thermodynamics of Compressible Fluid Flow.* Vol. 1. Ronald.

MECH344 HEAT TRANSFER

28 hrs lectures; 14 hrs tutorials
Assessment: One 2 hour paper at end of course

One and two-dimensional steady state conduction: free and forced convection; radiation; combined heat transfer mechanics and applications.

TEXTBOOK

Holman, J.P. *Heat Transfer.* 4th ed. McGraw-Hill.

RECOMMENDED READING

Chapman, A.J. *Heat Transfer.* 3rd ed. Macmillan.
Kreith, F. *Principles of Heat Transfer.* 3rd ed. International.

MECH342 THERMODYNAMICS II

28 hrs lectures; 14 hrs tutorials
Assessment: One 2 hour paper at end of course

Equations of state. Property relations. Gas mixtures. Compressibility charts. Psychometry. Vapour and gas power cycles. Heat pumps and refrigerators. Rotodynamic machines.

TEXTBOOKS

Reynolds, W.C. *Thermodynamics.* 2nd ed. McGraw-Hill.
or
Wark, K. *Thermodynamics.* 2nd ed. McGraw-Hill.

RECOMMENDED READING

Jones, J.B. & Hawkins, G.A. *Engineering Thermodynamics.* Wiley.
Shepherd, D. *Introduction to the Gas Turbine.* 2nd ed. Van Nostrand.
Sonntag, R.E. & Van Wylen, G.J. *Introduction to Thermodynamics.* Wiley.

MECH325 MACHINE DYNAMICS

28 hrs lectures; 14 hrs tutorials
Assessment: One 2 hour paper at end of course

Dynamics of simple mechanisms. Kinematics of involute gears. Balancing of rotors. Plane cam mechanisms.

MECH325 MACHINE DYNAMICS (CONT'D)

RECOMMENDED READING

Beer, F.P. & Johnston, E.R. *Vector Mechanics for Engineers - Dynamics.* McGraw-Hill.
Hirschhorn, J. *Dynamics of Machinery.* Nelson.
Hirschhorn, J. *Kinematics and Dynamics of Plane Mechanisms.* McGraw-Hill.
Holowenko, A.R. *Dynamics of Machinery.* Wiley.
Mabie, H.H. & Ocvirk, F.W. *Mechanisms and Dynamics of Machinery.* Wiley.

MECH363 SYSTEMS ANALYSIS I

28 hrs lectures; 14 hrs tutorials
Assessment: One 2 hour examination at the end of the course

Linear programming; network analysis; dynamic programming; queueing theory.

TEXTBOOK

Hillier, F.S. & Lieberman, G.J. *Introduction to Operations Research.* Holden-Day.

RECOMMENDED READING

Riggs, J.L. *Economic Decision Models.* McGraw-Hill.
Rosenbrock, H. & Storey, S. *Computational Techniques for Chemical Engineers.* Pergamon.
Wagner, H.M. *Principles of Operations Research.* Prentice-Hall.

MECH391 HEAT TRANSFER FOR CIVIL ENGINEERS

28 hrs lectures; 14 hrs tutorials
Assessment: One 2 hour paper at end of course

One and two dimensional steady state conduction; radiation; applications in Civil Engineering.

TEXTBOOK

Holman, J.P. *Heat Transfer.* 4th ed. McGraw-Hill.

RECOMMENDED READING

Chapman, A.J. *Heat Transfer.* 3rd ed. Macmillan.
Kreith, F. *Principles of Heat Transfer.* 3rd ed. International.

MECH392 INTRODUCTORY THERMOFLUID DYNAMICS

28 hrs lectures; 14 hrs tutorials

Concepts and definitions; energy transfer and the first law; fluid properties; control mass and control volume analysis; dimensional analysis; dynamic similitude; boundary layer theory; flow around bluff bodies; flow of real fluids in ducts; some practical demonstrations.

RECOMMENDED READING

To be advised during course.

400-LEVEL

MECH402 ENGINEERING MATERIALS II

28 hrs lectures; 14 hrs tutorials
Assessment: One 2 hour examination at end of course. Other short examinations and tutorials will be incorporated in the final assessment.

Phase equilibrium; alloying; diffusion; grain growth; heat treatment; thermal, magnetic and special properties of engineering materials; selection of materials for special applications, high strength, high temperature, wear, bearing, impact and corrosion resistant; use of specifications; composite materials.

RECOMMENDED READING

Keyser, C.A. *Materials science in engineering.* Merrill.
U.S. Steel Co. *The Making, shaping and treating of steel.*
Wulff, J. ed. *The Structure and Properties of Materials.* Wiley.

MECH403 MECHANICS OF SOLIDS III

28 hrs lectures; 14 hrs tutorials
Assessment: One 2 hour examination at end of course. Other short examinations and tutorials will be incorporated in the final assessment

Bending of flat plates; membrane stresses in shells; torsion of non-circular shafts; membrane analogy; application of strain energy methods to thin-walled curved tubes and plates and to buckling problems; bending of thick curved beams; real and complex stress functions; stress concentrations; stress waves; introduction to finite element method; bounds for plastic collapse loads in two-dimensional structures.

RECOMMENDED READING

Timoshenko and Woinonsky-Krieger. *Theory of Plates and Shells.* McGraw-Hill.
Timoshenko and Goodier. *Theory of Elasticity.* McGraw-Hill.

MECH413 MECHANICAL ENGINEERING DESIGN III

14 hrs lectures; 28 hrs tutorials
Assessment: No formal examination. Assessment will be based on drawing office assignments

Design of process and industrial machinery with reference to internal combustion engines, turbo-machines, air pollution control equipment, heat transfer apparatus, etc. Review of operational and safety requirements; principles of optimization and system synthesis.

TEXTBOOKS & RECOMMENDED READING

To be advised during course, depending on projects undertaken.

MECH415 OPTIMUM DESIGN

1 hr lecture; 2 hrs tutorials
Assessment: No formal examination. Assessment will be based on drawing office assignments

The use of computers for mechanical engineering design. Optimization techniques and their application to selected machine elements. Case studies and assignments to exemplify the principles of optimum design.

RECOMMENDED READING

Johnson, R.C. *Optimum Design of Mechanical Elements.* Wiley.

MECH423 APPLIED DYNAMICS I

28 hrs lectures; 14 hrs tutorials
Assessment: One 2 hour paper at end of course

Kinematics of particles and rigid bodies in three dimensions. Three dimensional dynamics of rigid bodies; inertia tensor; Euler's equations of motion. Relativistic dynamics. Dynamic analysis of mechanisms.

TEXTBOOKS

Hirschhorn, J. *Kinematics and Dynamics of Plane Mechanisms.* McGraw-Hill.
Huang, T.C. *Engineering Mechanics - Dynamics.* Addison-Wesley.

RECOMMENDED READING

Holowenko, A.R. *Dynamics of Machinery.* Wiley.
Housner, G.W. & Hudson, D.E. *Applied Mechanics, Dynamics.* Van Nostrand.
Mabie, H.H. & Ocvirk, F.W. *Mechanisms and Dynamics of Machinery.* Wiley.
McCuskey, S.W. *Introduction to Advanced Dynamics.* Addison-Wesley.
Smith, G.M. & Downey, G.L. *Advanced Dynamics for Engineers.* International.

MECH424 APPLIED DYNAMICS II

28 hrs lectures; 14 hrs tutorials
Assessment: One 2 hour paper at end of course

Lagrangian Dynamics and Hamilton's Principle applied to particles and rigid bodies; holonomic and non-holonomic constraints; dynamics of continuous systems; introduction to statistical mechanics.

MECH424 APPLIED DYNAMICS II (CONT'D)

TEXTBOOKS

To be advised.

RECOMMENDED READING

Crandall, S.H. et al. *Dynamics of Mechanical and Electro-Mechanical Systems.* McGraw-Hill.
Housner, G.W. & Hudson, D.E. *Applied Mechanics, Dynamics.* Van Nostrand.
McCuskey, S.W. *Introduction to Advanced Dynamics.* Addison-Wesley.

MECH425 HYDRAULIC AND PNEUMATIC SYSTEMS

28 hrs lectures, 14 hrs tutorials
Assessment: One 2 hour examination at end of course. All set assignments must be completed satisfactorily.

Analysis of hydraulic, pneumatic and vacuum power units for the provision of power and/or control in machines; circuit component characteristics; safety features, synthesis of systems.

RECOMMENDED READING

To be advised during course.

MECH433 LUBRICATION

28 hrs lectures; 14 hrs tutorials
Assessment: One 2 hour paper at end of course

Navier-Stokes and energy equations of fluid flow and their application to hydrodynamic lubrication. Characteristics of hydrodynamic and hydrostatic bearings. Bearing selection and design. Elasto-hydrodynamic lubrication. Friction and wear processes. Properties of lubricants and bearing materials and their inter-action. Lubrication in metal-working processes.

RECOMMENDED READING

To be advised during course.

MECH434 FLUID MECHANICS IV

28 hrs lectures; 14 hrs tutorials
Assessment: One 2 hour paper at end of course

Potential flow of incompressible fluids in two dimensions. Flow nets. Standard patterns of flow. Method of superposition. Conformal transformations in the complex plane. Introduction to two-dimensional flow of compressible fluids. Subsonic flow with small perturbations. Gothert's similarity law. Prandt-Glauert rule. Mach number effects. Thermodynamics of turbomachine processes. Stage efficiencies. Design considerations. Cavitation. Cascade mechanics. Thin airfoil theory.

RECOMMENDED READING

Csanady, G. *Theory of Turbomachines.* McGraw-Hill.
Pao, R.H.F. *Fluid Dynamics.* Merrill.
Vallentine, H.R. *Applied Hydro-dynamics.* Butterworths.

MECH443 THERMODYNAMICS III

28 hrs lectures; 14 hrs tutorials
Assessment: One 2 hour paper at end of course

Property relations-Jacobians. Thermographics. Availability and irreversibility. Statistical thermodynamics; Maxwell-Boltzman, Fermi-Dirac and Bose-Einstein statistics; partition function and relation to macroscopic properties of ideal gases. Irreversible processes; coupled flows and phenomenological relations; Thermomechanical and thermo-electric effects. Combustion and thermio-chemistry. Chemical equilibrium.

RECOMMENDED READING

Badger, P.H. *Equilibrium Thermodynamics.* Allyn & Bacon.
Crawford, F.H. & Van Vorst, W.D. *Thermodynamics for Engineers.* Harcourt Brace & World.
Kestin, J.A. *Course in Thermodynamics.* Vol. 1 & 2. Blaisdell.
Sonntag, R.E. & Van Wylen, G.J. *Fundamentals of Statistical Thermodynamics.* Wiley.
Tribus, M. *Thermostatics and Thermodynamics.* Van Nostrand.
Wark, K. *Thermodynamics.* McGraw-Hill.

MECH444 THERMODYNAMICS IV

28 hrs lectures; 14 hrs tutorials
Assessment: One 2 hour paper at end of course

Thermodynamic analysis of combustion engines, steam turbines and complete power systems.

RECOMMENDED READING

Gaffert. *Steam Power Stations.* McGraw-Hill.
Jones & Hawkins. *Engineering Thermodynamics.* Wiley.
Taylor & Taylor. *The Internal Combustion Engine.* International Textbook Co.

MECH445 REFRIGERATION AND AIR CONDITIONING

28 hrs lectures; 14 hrs tutorials
Assessment: One 2 hour examination at end of course

Studies of components used in refrigeration and air conditioning systems. Industrial applications.

TEXTBOOK

Stoecker, W.F. *Refrigeration and Air Conditioning.* McGraw-Hill.

RECOMMENDED READING

Harris, N.C. and Conde, D.F. *Modern Air Conditioning Practice.* 2nd ed. McGraw-Hill.

MECH463 CONTROL SYSTEMS III

28 hrs lectures; 14 hrs tutorials
Assessment: One 2 hour paper at end of course. Assignments may be incorporated into final assessment.

Review of classical control techniques; matrix calculus, multi-input multi-output systems; state-space analysis; stability; optimal control; interaction; Inverse Nyquist array.

RECOMMENDED READING

Ogata, K. *State-space analysis of control systems.* Prentice-Hall.
Raven, F.H. *Automatic control engineering.* McGraw-Hill.

MECH464 SYSTEMS ANALYSIS II

28 hrs lectures; 14 hrs tutorials
Assessment: One 2 hour paper at end of course.

Probabilistic models; simulation; reliability and inventory theory; non-linear programming.

RECOMMENDED READING

Broyden, C.G. *Basic Matrices.* Macmillan, 1975.

MECH465 SYSTEMS ANALYSIS III

28 hrs lectures; 14 hrs tutorials
Assessment: One 2 hour paper at end of course. Assignments may be incorporated in final assessment

Random signal analysis; experimental identification; analytical modelling; solution of equations; rate expressions; introduction to reactor design; non-ideal flow in reactors.

TEXTBOOK

Wylie, C.R. *Advanced Engineering Mathematics.* 4th ed. McGraw-Hill, 1975.

RECOMMENDED READING

Bendat, J.S. & Piersol, A.G. *Random Data: Analysis and Measurement Procedures.* John Wiley & Sons.
Levenspiel, O. *Chemical Reaction Engineering.* 2nd ed. John Wiley & Sons.
Newland, D.E. *Random Vibrations and Spectral Analysis.* Longman, 1975.

MECH473 MATERIALS HANDLING SYSTEMS I

28 hrs lectures; 14 hrs tutorials
Assessment: One 2 hour examination at end of course. All set assignments must be completed satisfactorily

Principles of granular mechanics; flow patterns in hoppers and bins; measurement of flow properties in relation to hopper design; feeders; flow rate prediction; prediction of pressures on bin walls.

RECOMMENDED READING

Brown, R.L. & Richards, J.C. *Principles of Powder Mechanics.* Pergamon.
Colijn, H. *Weighing and Proportioning of Bulk Solids.* Trans. Tech. Publ., 1975.
Jenike, A.W. *Gravity Flow of Bulk Solids.* Bul. 108. Utah Engineering Experiment Station, 1961.
Jenike, A.W. *Storage and Flow of Solids.* Bul. 123. Utah Engineering Experiment Station, 1964.
Reimbert, M. & A. *Silos: Theory and Practice.* Trans. Tech. Publ., 1976.
Reisner, W. & Eisenhart Rothe, M.V. *Bins and Bunkers for Handling Bulk Materials.* Trans. Tech. Publ., 1974.

MECH474 MATERIALS HANDLING SYSTEMS II

28 hrs lectures; 14 hrs tutorials
Assessment: One 2 hour paper at end of course. All set assignments must be completed satisfactorily

Advanced techniques for predicting bin loads; methods for improving hopper flow characteristics; flow of fine powders from storage; considerations of failure criteria for granular materials; solids mixing; dust hazards.

RECOMMENDED READING

As for MECH473 plus selected research papers.

MECH475 FLUID TRANSPORT OF BULK SOLIDS

28 hrs lectures; 14 hrs tutorials
Assessment: One 2 hour examination at end of course. All set assignments must be completed satisfactorily

Classification of systems for the hydraulic or pneumatic transport of bulk solids; fluid/solid flow studies; friction losses; conveying equipment; system design; economics; wear of plant and degradation of materials.

RECOMMENDED READING

To be advised during course.

MECH481 SPECIAL TOPICS IN MECHANICAL ENGINEERING I

42 hrs lectures and tutorials

There is no set syllabus for this subject. It is intended that it normally be offered on a specialised mechanical engineering topic given by visiting academic staff or engineering consultants.

MECH482 SPECIAL TOPICS IN MECHANICAL ENGINEERING II

42 hrs lectures and tutorials

There is no set syllabus for this subject. It is intended that it normally be offered on a specialised mechanical engineering topic given by visiting academic staff or engineering consultants.

MECH483 ENVIRONMENTAL ENGINEERING II

28 hrs lectures; 14 hrs tutorials
Assessment: One 2 hour examination at end of course together with one 2 hour class examination held during the course

The course aims to examine in detail industrial water pollution identification and control.

MECH483 ENVIRONMENTAL ENGINEERING II (CONT'D)

RECOMMENDED READING

Hammer, M.J. *Water and Waste-Water Technology.* John Wiley & Sons.
Metcalf & Eddy Inc. *Wastewater Engineering: Collection, Treatment, Disposal.* McGraw-Hill, 1972.
N.S.W. Clean Waters Act 1970.
N.S.W. Regulations to Clean Waters Act 1972.
Patterson, J.W. *Wastewater Treatment Technology.* Ann Arbor.
Vesilind, P.A. *Treatment and Disposal of Waste Water Sludges.* Ann Arbor.

MECH484 ENVIRONMENTAL ENGINEERING III

28 hrs lectures; 14 hrs tutorials
Assessment: One 2 hour examination at end of course together with one 2 hour class examination held during the course

The course aims to examine in detail the causes and control of air pollution.

RECOMMENDED READING

Crawford, M. *Air Pollution Control Theory.* McGraw-Hill.
Hesketh, H.E. *Understanding and Controlling Air Pollution.* Ann Arbor, 1972.
Noll, K. and Duncan, J. *Industrial Air Pollution Control.* Ann Arbor, 1973.
Rossano, A.J. ed. *Air Pollution Control: Guide Book for Management.* McGraw-Hill, 1974.

MECH485 ENVIRONMENTAL ENGINEERING IV

28 hrs lectures; 14 hrs tutorials
Assessment: One 2 hour examination at end of course together with one 2 hour examination held during the course

The course aims to discuss in detail the causes and control of noise pollution

RECOMMENDED READING

Bugliarello, G., Alexandre, A., Barnes, J. and Wakstein, C. *The Impact of Noise Pollution.* Pergamon Press, 1976.
Petrusewicz, S.A. and Longmore, K.D. eds. *Noise and Vibration Control for Industrialists.* Elek Science.
Sharland, J. *Woods Practical Guide to Noise Control.* Waterlow (Dunstable) Ltd.
Webb, J.D. ed. *Noise Control in Industry.* Anchor Press Ltd.

MECH497 INDUSTRIAL TRAINING

While enrolled in the Mechanical Engineering course students are required to obtain an aggregate of at least twelve weeks of relevant practical experience during the summer recesses. This training period must be spent in a suitable industrial environment outside the University.

Upon completion of their industrial training students must prepare a report on their training activities for submission to the Department for assessment.

MECH401 THESIS

20 credit points
Assessment: Assessment of a submitted written thesis

During the final year of study for the Bachelor of Engineering Degree, each student is required to prepare a thesis on a subject or topic approved by the Chairman of the Department. Two bound copies of the completed thesis must be lodged with the Chairman of the Department by the due date posted.

The subject of a thesis may cover:
(a) a report of original work performed by the student in the laboratory or field;

(b) a theoretical and experimental investigation of a Mechanical Engineering problem;

(c) a set of drawings and calculations covering a Mechanical Engineering design.

The aim of the thesis is for the student to learn how to examine published and experimental data, set objectives, organize a programme of work, and analyse results and evaluate these in relation to existing knowledge. The thesis will be judged on the extent and quality of the students' work, and particularly how critical, perceptive and constructive they have been in assessing their own work and the work of others.

MECH401 THESIS (CONT'D)

Students anticipating an Honours Degree are required to show facility in original and critical thought. Although sufficient time is allowed in their final year, part-time students are recommended to commence their thesis at the end of Stage V and then attend the University full-time for a period of three weeks during January, February or June of their final year.

METALLURGY

Society uses a very wide variety of materials; metals, plastics, semiconductor materials and ceramics, to mention only the most familiar. Metallurgy is an applied science concerned with the extraction of metals from their ores and with the processes used to convert them into useful products. Although metallurgists are particularly concerned with metallic materials, they pursue their subject in the broad context of materials generally. Accordingly, the subject is a diverse one and is divided into several branches. The fundamental principle guiding *physical metallurgy* is that the properties of all materials are determined by their detailed atomic architecture, so that if the relationship between structure and properties is understood it is possible to synthesize materials suited to any particular application. This relationship is investigated mainly by the methods of the physical sciences such as optical and electron-optical microscopy, X-ray and electron diffraction.

In *extractive metallurgy* the methods of chemistry and chemical engineering are used to develop processes for "extracting" metals from their ores and refining them to a satisfactory purity. Topics of special interest include high-temperature physical chemistry, heat transfer and the flow of liquids and gases.

The courses provided in the Department of Metallurgy are broadly based and prepare a graduate for later specialization in any chosen branch of the subject.

Full-time and part-time courses are offered. The full-time course occupies four years; the part-time course normally takes six years to complete, but this may be reduced to five years by spending a year in full-time study.

While all courses are largely prescribed, options are provided and are chosen in consultation with the Chairman of the Department.

Assessment: Subjects are assessed by written examinations at the end of each session, together with credit for assignments and laboratory work. Projects 1 and 2: examination of report or thesis, together with oral examination.

Note: For students enrolled prior to 1976 special programmes will be prescribed by the Department where appropriate.

SCHEDULE ENTRIES

Refer to Schedule D for approved details of the subjects described in this section. Subjects which also appear in other schedules are:

Subject	*Schedule*
METL121	A
METL201	C

100-LEVEL

METL121 NATURE OF MATERIALS

Plane patterns: plane lattices, unit cells, symmetry, geometrical properties.

Three dimensional patterns: space lattices, macroscopic and microscopic symmetry, unit cell, crystal classifications, Bravais lattices, geometrical properties.

Crystals: structure of crystals, elements, compounds, solid solutions, ordering.

Defects in crystals: lattice properties - thermal, electrical, magnetic, optical.

Bonding in solids, liquids and gases.

Non-crystalline materials: structures of polymers, glasses, liquids, relationship with properties.

Crystals and polycrystals: microstructures, genesis of structure, relationship with properties.

Observation of structure: resolution of microscopical techniques, X-ray diffraction, Bragg Law, geometrical theory, determination of crystal structure.

TEXTBOOK

Wulff, J. ed. *Structure & Properties of Materials.* Vol. 1. Wiley.

200-LEVEL

METL211 THERMODYNAMICS I

Definitions. First, second and third law. Auxiliary functions. Experimental methods and calculations. Elementary thermodynamics in metallurgy, particularly metal extraction and refining: uses and limitations.

TEXTBOOK

Gaskell, R.D. *Introduction to Metallurgical Thermodynamics.* McGraw-Hill.

METL231 MECHANICS OF SOLIDS I

Resolution of stress and strain, complex stress, Poisson contraction, strain energy, yield criteria, stress concentration; surface energy, stress concentration and plastic work, approaches to fracture.

METL241 FLUID FLOW

Introduction to fluid flow. Viscosity. Analytical and energy balance approaches to flow in pipes, ducts, etc. Reynold's expt., dimensional analysis. Flow meters. Flow of solids through fluids. Form drag and drag coefficients. Flow through packed beds, fluidization.

TEXTBOOK

Geiger, G. & Poirier, D. *Transport Phenomena in Metallurgy.* Addison-Wesley.

METL251 STRUCTURE OF METALS 1

Binary phase equilibrium diagrams; genesis of microstructure of one and two phase alloys; elementary transformation theory; transformations under non-equilibrium conditions; optical metallography; quantitative metallography, recovery, recrystallization and grain growth.

TEXTBOOKS

Chadwick, G. *Metallography of Phase Transformations.* Butterworths.
Reed-Hill, R. *Physical Metallurgy Principles.* Van Nostrand.
Wulff, J. ed. *The Structure and Properties of Materials.* Vol. II. Wiley.

METL252 STRUCTURE AND MECHANICAL PROPERTIES 1

Elementary ideas of stress and strain, general introduction to mechanical behaviour, structure dependence of mechanical properties, time and temperature sensitivity, elementary behaviour of dislocations, strain rate sensitivity, yield phenomena.

TEXTBOOK

Dieter, G.E. *Mechanical Metallurgy.* McGraw-Hill.

RECOMMENDED READING

Gordon, J.E. *The New Science of Strong Materials.* Penguin.

METL271 TRANSFORMATIONS 1

Kinetics; diffusion; Ficks laws; mechanisms of nucleation and interface propagation in solids; recrystallization and grain growth.

TEXTBOOK

Reed-Hill, R.E. *Physical Metallurgy Principles.* Van Nostrand.

METL281 EXTRACTIVE METALLURGY

Ferrous extraction and refining. Burden materials and preparation, blast furnace reactions. Steelmaking processes, ingot structures. Vacuum processes and continuous casting.

Occurrence, extraction principles and a survey of common extraction processes of some non-ferrous metals, e.g. Cu, Pb, Zn, Al, Ni, Au, etc.

Review of homogeneous kinetics and introduction to heterogeneous kinetics. Interpretation of constant volume and variable volume kinetic data. Temperature and pressure effects of reaction rates. Single ideal reactors - bath and flow type. Multiple reactor systems - series, parallel and mixed. Applications.

TEXTBOOKS

Rosenqvist, T. *Principles of Extractive Metallurgy.* McGraw-Hill.
Levenspiel, O. *Chemical Reaction Engineering.* Wiley.

300-LEVEL

METL301 CERAMICS

Crystal structures of oxides and silicates. Non-crystalline phases. Phase equilibria in ceramic systems. Structural changes during processing and in service. Properties and their control.

Classification of refractories. Significant properties and service behaviour. Testing.

METL311 THERMODYNAMICS 2

Solution thermodynamics. Relative partial and integral quantities and their inter-relationships in binary solutions. Methods of measurement and calculations; applications and limitations. Multicomponent solutions, interaction coefficients, change of standard states. Thermodynamics of phase equilibria.

TEXTBOOK

Gaskell, R.D. *Introduction to Metallurgical Thermodynamics.* McGraw-Hill.

METL312 ELECTROCHEMICAL PROCESSES

Aqueous corrosion: chemistry, thermodynamics and kinetics. Influence of external factors. Corrosion prevention. Electropolishing, deposition, anodizing.

Dry corrosion: gas-metal reactions. Oxide scales - formation and properties. Protection.

Hydrometallurgy: general review of processes. Solution equilibria, thermodynamics and kinetics. Leaching, separation and recovery. Representative examples of common processes.

TEXTBOOK

Wranglen, G. *An Introduction to the Corrosion and Protection of Metals.* Institute for Metallskydd, Stockholm.

METL321 PHYSICS OF METALS 1

Electrons in solids; zone and band theory; conductivity and magnetism; electron/crystal interactions; X-ray diffraction; electron diffraction and transmission microscopy, scanning electron microscopy, electron probe microanalysis, field ion microscopy, field emission microscopy, etc.

TEXTBOOKS

Barrett, C. & Massalski, T. *Structure of Metals.* 3rd Ed., McGraw-Hill.
Wulff, J. ed. *The Structure and Properties of Materials.* Vol. IV. Wiley.

METL331 MECHANICS OF SOLIDS 2

Plastic flow, complex strain, plastic instability, analysis of shaping processes by work evaluation, by force equilibrium and by shear line field methods, friction effects, applications to common deformation conditions.

TEXTBOOK

Backofen, W.A. *Deformation Processing.* Addison-Wesley.

RECOMMENDED READING

Parkins, R.W. *Mechanical Treatment of Metals.* George Allen and Unwin.

METL341 MASS TRANSFER

Review of diffusion and Fick's Law. Mass transfer in fluid systems. Molecular and eddy diffusivity. Two-film and penetration theories. The mass transfer coefficients. Exact solutions. Correlations of mass transfer coefficients for turbulent flow. Analogy with heat transfer. Equations for special cases of mass transfer with convection.

TEXTBOOKS

Geiger, G. & Poirier, D. *Transport Phenomena in Metallurgy.* Addison-Wesley.
Levenspiel, O. *Chemical Reaction Engineering.* Wiley.

METL342 HEAT TRANSFER

Steady-state conduction, resistance concept. Convection, heat transfer coefficients and correlations, heat exchangers. Radiation. Unsteady-state conduction. Analytical, graphing and finite difference solutions. Analogues. Quenching and solidification heat transfer.

TEXTBOOK

Geiger, G. & Poirier, D. *Transport Phenomena in Metallurgy*. Addison-Wesley.

METL351 STRUCTURE OF METALS 2

Heat treatment, microstructure and properties of plain carbon steels and cast iron: ternary phase equilibria; ternary phase diagrams; structure and properties of alloy steels; hardenability; engineering applications and failure analysis.

TEXTBOOK

Reed-Hill, R. *Physical Metallurgy Principles*. Van Nostrand.

METL353 THERMOMECHANICAL PROCESSING

Theory of phase transformations in steel; strengthening of ferrous and non-ferrous alloys; relationships between strength, toughness and microstructures produced by thermomechanical treatments; strength and ductility at elevated temperatures.

METL361 REACTION ENGINEERING 1

Fundamental consideration of reactor performance for multiple reactions.

Temperature and pressure effects on reactor yield. Isothermal and adiabatic reactors. Non-ideal flow. RTD flow models. Reactor yield with non-ideal flow. Applications.

TEXTBOOK

Levenspiel, O. *Chemical Reaction Engineering*. Wiley.

METL381 EXTRACTION ENGINEERING

Discussion of selected topics to illustrate particular application of metallurgical engineering principles of fluid flow, heat and mass transfer, thermodynamics and reaction engineering to such topics as the development of a heat transfer model of continuous casting using analog and digital computer simulation; the development of slag theories and their application in extraction; reaction engineering of iron ore reduction in direct reduction processes and blast furnaces; the application of fluid flow theory to investigate jets, nozzles, tuyeres.

METL391 METALLURGY PROJECT 1

A literature survey and experimental work on some aspect of metallurgy.

*400-LEVEL**

METL401 METALLURGICAL RESOURCES

Metallurgical resources and their utilization. The influence of technological developments in Metallurgical industries. Detailed consideration of particular industries such as the iron and steel industry.

METL421 PHYSICS OF METALS 2

Advanced geometrical, kinematical and dynamical electron and X-ray diffraction theory; reciprocal lattice, stereographic projection.

TEXTBOOK

Barrett, C., and Massalski, T. *Structure of Metals*. 3rd ed. McGraw-Hill.

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*A selection of 400-level subjects is to be selected in consultation with the Chairman of the Department of Metallurgy. Some of the 400-level subjects listed may not be available in any given year.

METL431 FRACTURE

Plastic constraint, fracture mechanics for conditions of plane stress and strain and of general yielding, C.O.D. testing, fatigue, stress corrosion, mechanisms of crack nucleation and propagation.

METL441 PROCESS MODELLING

Analogue computer simulation. Linear, non-linear and memory components. Scaling. Parallel logic. Applications in Metallurgical systems.

METL451 STRUCTURE OF METALS 3

Strengthening of ferrous and non-ferrous alloys; relationships between strength, toughness and microstructure; thermomechanical treatments, ausforming, isoforming, austempering, martempering, maraging, etc.; high performance alloys.

METL452 STRUCTURE & MECHANICAL PROPERTIES 2

Relationships among elastic constants for isotropic continua, generalised Hooke's law, yield surface for anisotropic materials, development of preferred orientations, elastic properties of dislocations, dislocation interactions and reactions, strain hardening.

TEXTBOOK

Hull, D. *Introduction to Dislocations*. Pergamon.

METL453 STRUCTURE & MECHANICAL PROPERTIES 3

Hot deformation processes; creep; superplasticity; high temperature fracture; dynamic recovery and recrystallization.

METL461 REACTION ENGINEERING 2

Mixing and segregation. Effect on yield. Design for heterogeneous reacting systems. Fluid-solid systems. Reaction and mass transfer control. Single and multiple particle systems. Fluid-fluid systems. Pure mass transfer. Mass transfer with chemical reaction. Rate expressions for various kinetic regimes. Design strategy for single and multiple reactors. Applications.

TEXTBOOK

Levenspiel, O. *Chemical Reaction Engineering*. Wiley.

METL471 TRANSFORMATIONS 2

Theory of transformation of autenite to pearlite, bainite and martensite; tempering; transformation diagrams.

METL472 SOLIDIFICATION

Nucleation. Growth structures in pure metals, single and polyphase alloys. Cast structure development and control. Grain refinement and modification. Segregation. Thermodynamics and fluid flow in solidification. Processing and properties.

METL481 MINERAL ENGINEERING

Mineralogy of ore minerals. Liberation. Size analysis and distribution. Comminution. HMS separation. Magnetic and electrostatic separation. Flowing film separation. Froth flotation, filtering and drying. Analysis of the processing of minerals including coal for use in the extraction of selected metals.

METL482 IRON AND STEEL MAKING

Reduction of iron oxides in the shaft. Thermodynamic and kinetic aspects. Analysis of the blast furnace as a counter-current reactor. Rist's diagrams. Calculation of heat and oxygen balances in the production zone. Departure from non-ideality resulting from increased driving rates. Role of

METL482 IRON AND STEEL MAKING(CONT'D)

injectants in the blast furnace process. Steelmaking. Structure of slags, slag theories, acidity and basicity. Steelmaking reactions - C.S. & P. removal. Processes - conventional and oxygen processes. Non-equilibrium conditions.

METL491 METALLURGY PROJECT 2

A literature survey and experimental work on some aspect of metallurgy.

PHILOSOPHY

Philosophy studies those problems which cannot be solved by the methods of the natural sciences; i.e. which cannot be solved by carrying out a physical experiment, making an observation, or doing a mathematical calculation. Examples of these non-scientific but nonetheless real problems are (1) Is there a God beyond the physical world? (2) Do moral distinctions rest on objective foundations or are good and bad matters of subjective preference? (3) How should I relate to other individuals and to institutions such as the state? (4) Am I a purely material being or does my having a mind set me apart from nature? (5) Is free will a reality or an illusion? and (6) the nature of truth and the methods by which it can be approached. The two main reasons for studying philosophy are firstly to attempt to formulate and justify one's own solutions to these and many other problems (and to find out and understand what others have said), and secondly to unearth and critically examine the many unstated assumptions implicit in our everyday thought and conduct. The study of philosophy does not depend upon any discipline or body of information acquired in secondary education.

SCHEDULE ENTRIES

Refer to Schedule A for approved details of the subjects described in this section.

100-LEVEL

PHIL103 PHILOSOPHY 103

Lectures per week - 2; tutorials per week - 1
Assessment: 1 three hour 'open book' examination (60%); 2x2,000 word essays (2 x 15%); tutor's assessment (10%)

The first session is concerned mainly with questions of *metaphysics* (theory of being) and epistemology (theory of knowledge). Issues considered include (i) what, if anything, can be known with certainty, (ii) the essence of the human person, personal individuality, and the nature of the self, (iii) the relation between the mind and the body, (iv) attempts to prove (or refute) the existence of God, (v) human imperfection, and (vi) our knowledge of the external world. The *Meditations* of the seventeenth century French philosopher Rene Descartes will be given critical attention. This session includes a brief introduction to philosophical sources and vocabulary and some of the fundamental concepts of modern logic.

The second session is concerned mainly with questions of political and moral philosophy. Issues considered include (i) the relations between law and morality, (ii) legal constraint and individual liberty, (iii) welfarism versus libertarianism, (iv) the degree to which I am responsible for what I become, (v) the character of *existentialism*, (vi) criteria for a moral stance, and (vii) self-discovery, self-deception, and self-modification. John Stuart Mill's *On Liberty* and Jean-Paul Sartre's *Existentialism is a Humanism* will be given critical attention.

TEXTBOOKS

Anscombe, Elizabeth & Geach, P.T. eds. *Descartes' Philosophical Writings.* Nelson, London, 1954.
Gorovitz, S. & Williams, R.G. *Philosophical Analysis: An Introduction to its Language and Techniques.* Random House, New York, 1969.
Kaufmann, W. ed. *Existentialism from Dostoevsky to Sartre.* Meridian, New York, 1965.
Mill, J.S. *On Liberty (and other essays).* Oxford University Press, London, 1912 (or any other edition).

RECOMMENDED READING

Bacon, W., and Coleman, P. *Censorship.* Heinemann Educational, Melbourne, 1974.
Charlesworth, M.J. *The Existentialists.* A.B.C. - Queensland University Press, Brisbane, 1975.
Devlin, Patrick. *The Enforcement of Morals.* Oxford University Press, London, 1965.
Doney, Willis, ed. *Descartes: A Collection of Critical Studies.* Anchor, New York, 1967.
Hart, H.L.A. *Law, Liberty, and Morality.* Oxford University Press, London, 1963.
Kenny, Anthony. *Descartes: A Study of His Philosophy.* Random House, New York, 1968.
Lacey, A.R. *A Dictionary of Philosophy.* Routledge and Kegan Paul, London, 1976.
Marcuse, H. *An Essay on Liberation.* Beacon Press, Boston, 1969.

PHIL112 LOGIC A

Lectures per week - 2; tutorials per week 1
Assessment: 6 in-session exercise assignments

A second session introduction to elementary logic and its relation to natural language and reasoning. Topics dealt with include (1) demonstrative and problematic arguments, (2) logical form, (3) propositional calculus, (4) predicate calculus and its extensions, (5) decision procedures and glimpses of meta-theory. Natural deduction techniques will be used in proof construction, however proof trees and axiomatic methods will be introduced. No mathematical or technical knowledge of any sort is pre-supposed, and the connections with everyday thought and language are considered.

PHIL112 LOGIC A(CONT'D)

TEXTBOOK

Lemmon, E.J. *Beginning Logic.* Nelson, London, 1954.

RECOMMENDED READING

Jeffrey, R.C. *Formal Logic: Its Scope and Limits.* McGraw-Hill, New York, 1967.
Quine, W.V. *Methods of Logic.* Routledge and Kegan Paul, London, 1974.

PHIL123 PHILOSOPHY 123

Lectures per week - 2; tutorials per week - 1
Assessment: 1 three hour 'open book' examination (60%); 2x2,000 word essays (2 x 15%); tutor's assessment (10%)

This evening course examines seven fundamental philosophical problems. In the first session the problems considered are (1) the nature of philosophical inquiry, (2) the interpretation of religious language, and arguments attempting to prove, or refute, the existence of God, (3) human behaviour and the question of whether humans have genuine and creative freedom of the will, or are just very complicated pre-determined organic structures, and (4) the mind and its relation to the brain and body, and the possibility of life after death.

In the second session the problems are (5) the nature of truth, and its relation to evidence and certainty, (6) language and perception as representations of an independent reality, and (7) human conduct, moral authority and responsibility, and arguments about the nature and sources of value. Basic concepts and vocabulary of logic will be introduced as required during the course.

TEXTBOOKS

Gorovitz, S. and Williams, R.G. *Philosophical Analysis: An Introduction to its Language and Techniques.* Random House, New York, 1969.
Margolis, J.Z. ed. *An Introduction to Philosophical Inquiry.* Knopf, New York, 1968.

RECOMMENDED READING

Armstrong, D.M. *A Materialist Theory of the Mind.* Routledge and Kegan Paul, London, 1968.
Lacey, A.R. *A Dictionary of Philosophy.* Routledge and Kegan Paul, London, 1976.
Pitcher, G. ed. *Truth.* Prentice-Hall, Englewood Cliffs, 1964.

PHIL143 POLITICAL THEORY

Lectures - 2; tutorials - 1
Assessment: 3 hour examination paper (50%); 2 essays (each 2,000 words) (30%); tutor's assessment (20%)

A full year introduction to the study of politics covering three closely related areas: political science, theory of democracy, and democracy in Australia. The course aims to develop skills in the analysis of conceptual, empirical, and normative issues in politics. The topics of the course include some central concepts of politics, classical and pluralist theory of democracy and their conservative and radical critiques, and Australia's political institutions.

TEXTBOOKS

Connolly, William E. *The Terms of Political Discourse.* Heath, Lexington, Mass., 1974.
Dahl, Robert A. *Modern Political Analysis.* Prentice-Hall, Englewood Cliffs, 1970.
Emy, Hugh V. *The Politics of Australian Democracy.* Macmillan, Melbourne, 1974.
Plamenatz, J. *Democracy and Illusion.* Longman, London, 1973.

RECOMMENDED READING

Butler, D. *The Canberra Model.* Cheshire, Melbourne, 1973.
Cohen, Carl. *Democracy.* Macmillan, London and New York, 1973.
Hayek, F.A. *The Constitution of Liberty.* Routledge, London, 1960.
Kariel, Henry S. *Frontiers of Democratic Theory.* Random House, New York, 1970.
Lucy, Richard, ed. *The Pieces of Politics.* Macmillan, Melbourne, 1975.
Mayer, H. and Nelson, H. eds. *Australian Politics - A Fourth Reader.* Cheshire, Melbourne, 1975.
Milliband, Ralph. *The State in Capitalist Society.* Quartet Books, London, 1973.
Pateman, C. *Participation and Democratic Theory.* C.U.P., Cambridge, 1975.
Sawer, G. *The Australian Constitution.* AGPS, Canberra.

PHIL153 CLEAR THINKING AND ARGUMENTS

Lectures per week - 2; tutorials per week - 1
Assessment: 10 written assignments during the year

PHIL153 CLEAR THINKING AND ARGUMENTS (CONT'D)

An elementary full-year course in (i) clarity of expression of thought, and (ii) sound reasoning. Under (i) consideration is given to different types of definition, precision and vagueness, ambiguity, and open texture. Under (ii) special attention is paid to the distinctions between truth and validity, and demonstrative versus problematic reasoning (including deduction and induction). Students will be trained in spotting bad inferences and in the recognition of common techniques of persuasion. The course is designed to be of general interest, and of use to students irrespective of whether they intend to proceed to further studies within the Department of Philosophy. Students will be given a working knowledge of the propositional calculus and predicate calculus, and invited to consider the relationship between formal logical systems and ordinary thought, reasoning, and language. No technical knowledge of mathematics is presupposed.

TEXTBOOKS

Hempel, C.G. *Philosophy of Natural Science.* Prentice-Hall, Englewood Cliffs, 1966.
Lemmon, E.J. *Beginning Logic.* Nelson, London, 1965.

RECOMMENDED READING

Hamblin, C.L. *Fallacies.* Methuen, London, 1970.

200-LEVEL

PHIL211 CLASSICAL PHILOSOPHY

Three 1 hr lecture-discussions per week
Assessment: 80% - 3 hr examination paper at end of session 1; 10% - essay of 2,500 words; 10% - teacher's assessment

A detailed examination of Plato's *Republic* and an assessment of Plato's opinions on such questions as the point of morality, the nature of knowledge, knowledge of the universal as well as the particular, assessment and evaluation by standards and ideals, the perfect form of government, the purposes of education, and the responsibilities of the philosopher.

TEXTBOOKS

Gorowitz, S. & Williams, R.G. *Philosophical Analysis: An Introduction to its Language and Techniques.* Random House, New York, 1969.
Plato. *The Republic.* Penguin, Harmondsworth, 1963.

RECOMMENDED READING

Crombie, I.M. *An Examination of Plato's Doctrines.* 2 vols. Routledge & Kegan Paul, London, 1962.
Cross, R.C. & Woozley, A.D. *Plato's Republic, a Philosophical Commentary.* Macmillan, London, 1964.
Field, G.C. *Philosophy of Plato.* Oxford U.P., London, 1949.
Nettleship, R.L. *Lectures on the Republic of Plato.* Macmillan, London, 1901.
Parmenides' *Way of Truth* and Plato's *Parmenides.* Trans. and intro. by F.M. Cornford, Routledge & Kegan Paul, London, 1939.
Popper, K.R. *The Open Society and Its Enemies.* Vol. 1. Routledge & Kegan Paul, London, 1962.
Ross, W.D. *Plato's Theory of Ideas.* Oxford U.P., Oxford, 1951.
Ryle, G. *Plato's Progress.* Cambridge U.P., Cambridge, 1966.
Sesonske, A. ed. *Plato's Republic: Interpretation and Criticism.* Wadsworth, Belmont, 1966.
Vlastos, G. ed. *Plato, A Collection of Critical Essays.* 2 vols. Doubleday, New York, 1971.

PHIL221 GENERAL HISTORY OF LOGIC

Three 1 hr lecture-discussions per week
Assessment: 70% - 3 hr examination paper at end of first session; 20% - 2 written submissions of which one must be, and both may be, a set of revision exercises, and one may be an essay of 1,500 words; 10% - teacher's assessment

A critical examination of the evolution of logic beginning with a detailed examination of Aristotelian syllogistic and its extensions, and culminating with observations on current meta-theoretical developments. Special attention will be given to the importance of Gottlob Frege's invention of the quantifier. Criteria for assessing the worth of a logic will be considered. No technical knowledge of logic is presupposed, however, it is essential for students who have not taken one of PHIL103, PHIL113 or PHIL123 to read the book set as Preliminary Reading prior to the commencement of the session.

PRELIMINARY READING

Gorovitz, S. & Williams, R.G. *Philosophical Analysis: An Introduction to its Language and Techniques.* Random House, New York, 1969.

PHIL221 GENERAL HISTORY OF LOGIC(CONT'D)

TEXTBOOKS

Bochenski, J.M. *Ancient Formal Logic.* North-Holland, Amsterdam, 1951.
Nagel, E. & Newman, J.R. *Gödel's Proof.* Routledge & Kegan Paul, London, 1959.
Nidditch, P.H. *Development of Mathematical Logic.* Routledge & Kegan Paul, London, 1962.

RECOMMENDED READING

Boole, G. *Mathematical Analysis of Logic.* Blackwell, Oxford, 1958.
Hamblin, C.L. *Fallacies: the History of Logical Thought.* Methuen, London, 1970.
Kneale, W. & M. *Development of Logic.* Oxford U.P., London, 1960.
Van Heijenoort, J. ed. *From Frege to Gödel.* Harvard U.P., Cambridge, Mass., 1967.

PHIL222 SET THEORY 222

Three 1 hr lecture-discussions per week
Assessment: 60% - 3 hr examination paper at the end of session 2; 10% - essay of 2,000 words; 20% - two sets of revision exercises; 10% - teacher's assessment.

An examination of the origins and devepments of the general theory of classes sufficient (1) to understand and consider philosophical controversies surrounding the foundations of mathematics, number theory, and infinity, and (2) to comprehend applications of set theory to model theory in general and semantics in particular. This course assumes a working knowledge of the propositional and predicate calculi, and is assumed by the Advanced Formal Logic option in fourth year honours. The approach will generally be discursive and critical and will not emphasise the finer technicalities of proof construction. The system taught is a variant of von Neumann-Bernays-Gödel set theory, however Zermelo-Fraenkel and Russellian variations are noted. Topics discussed include (i) Paradoxes, (ii) Relations and their formal properties, (iii) Cardinals and Ordinals, (iv) Infinities, and (v) The Axiom of Choice.
(Students who have passed MATH321 are welcome to attend but cannot claim credit for this subject.)

TEXTBOOK

Lemmon, E.J. *Introduction to Axiomatic Set Theory.* Routledge & Kegan Paul, London, 1969.

RECOMMENDED READING

Bernays, P. & Fraenkel, A.A. *Axiomatic Set Theory.* North-Holland, Amsterdam, 1968.
Fraenkel, A.A., Bar-Hillel, Y. & Levy, A. *Foundations of Set Theory.* North-Holland, Amsterdam, 1973.
Quine, W.V. *Set Theory and Its Logic.* Harvard, U.P., Cambridge, Mass. 1969.

PHIL223 PROBLEMS OF PHILOSOPHY

Lectures per week - 2; tutorials per week - 1
Assessment: 1 three-hour 'open-book' examination (60%); 2x2,500 word essays (2 x 15%); tutor's assessment (10%)

This full year evening course examines several recurring philosophical problems, selected because of their familiarity to reflective people who have never begun any systematic study of philosophy. The problems come from a number of different branches of philosophy including *metaphysics* (Is there a God?) *human nature* (Do we have freedom of the will? Is life after death possible? Is the mind spiritual?) *semantics* (What is truth? What is meaning?) *philosophical psychology* (When is a movement an action? What does perception tell us about ourselves and the world?) *epistemology* (How do we know which techniques lead us to the truth? What is certainty and when, if ever, is it justified?) *moral and political philosophy* (What criteria should determine which forms of conduct and social organization are good or bad?) and *metaphilosophy* (What is the nature and what is the value of philosophical inquiry?)

TEXTBOOKS

Gorowitz, S. and Williams, R.G. *Philosophical Analysis: An Introduction to Its Language and Techniques.* Random House, New York, 1969.
Margolis, J. *An Introduction to Philosophical Inquiry.* Knopf, New York, 1968.

RECOMMENDED READING

Campbell, K. *Body and Mind.* Macmillan, London, 1970.
Chisholm, R. *Theory of Knowledge.* Prentice-Hall, Englewood Cliffs, 1966.
Taylor, R. *Metaphysics.* Prentice-Hall, Englewood Cliffs, 1974.

PHIL232 POLITICAL PHILOSOPHY A

Lecture-discussions per week - 3
Assessment: One 3-hour examination at the end of session 2. One essay of 2,500 words. The proportion of marks will be determined by the class during the first contact hour. The exam will be at least 60% of marks; the exam and essay together will be 90% of marks. 10% will be tutor's assessment

A critical introduction to the writings of some of the main classical political philosophers. Particular emphasis will be given to Plato, Aristotle, Hobbes, Locke, Rousseau, Marx and Engels. The course covers conservative, liberal and radical views of the nature of the state and is especially suitable for students with a limited philosophy background.

TEXTBOOKS

Aristotle. *Politics.* Penguin, Harmondworth, 1972.
Hobbes, T. *Leviathan.* ed. M. Oakeshott, Collier Books, New York, 1967.
Locke. J. *Two Treatises on Civil Government.* Dent, London, 1924.
Marx, K. & Engels, F. *The Marx-Engels Reader.* ed. R.C. Tucker, Norton, New York, 1972.
Plato. *The Republic.* 2nd ed. Penguin, Harmondsworth, 1975.
Raphael, D.D. *Problems of Political Philosophy.* Macmillan, London, 1970.
Rousseau, J.J. *The Social Contract.* Dent, London, 1973.

RECOMMENDED READING

Acton, H.B. *The Illusion of the Epoch.* Routledge & Kegan Paul, London, 1973.
Avineri, S. *The Social and Political Thought of Karl Marx.* C.U.P., Cambridge, 1971.
Benn, S.I. & Peters, R.S. *Social Principles and the Democratic State.* Allen & Unwin, London, 1969.
Hume, D. *Of the Original Contract* in *Hume's Ethical Writings.* ed. MacIntyre, A. Collier, New York, 1965.
Lucas, J.R. *The Principles of Politics.* O.U.P., Oxford, 1967.
McClellan, D. *The Thought of Karl Marx.* Macmillan, London, 1971.
Plamenatz, J. *Man and Society.* 2 vols. Longman, 1967.
Wolin, S.S. *Politics and Vision.* Little, Brown & Company, Boston, 1960.

PHIL233 PHILOSOPHY OF LANGUAGE

Lecture-discussions - 3
Assessment: Examination - 3 hr at end of year (60%); Essays - 2 x 2,500 words (30%); Teacher's assessment (10%)

An examination of recent and contemporary theories of sense and reference, with particular attention to such questions as the meaning of existential expressions and the significance of statements of identity, apparent reference to the non-existent, the proper understanding of definite singular terms, the relations between semantics, syntax, and pragmatics, and ordinary use theories of meaning, with particular reference to the work of the later Wittgenstein and his contemporary critics.

TEXTBOOKS

Ammerman, R.R. ed. *Classics of Analytic Philosophy.* McGraw-Hill, New York, 1965.
Wittgenstein, L. *Philosophical Investigations.* Blackwell, Oxford, 1953.

RECOMMENDED READING

Ayer, A.J. *Moore and Russell - The Analytical Heritage.* Macmillan, London, 1972.
Charlesworth, M.J. *Philosophy and Linguistic Analysis.* Duquesne University Press, Pittsburgh, 1959.
Lacey, A.R. *A Dictionary of Philosophy.* Routledge, London, 1976.
Pears, D.F. *Wittgenstein.* Fontana/Collins, London, 1971.
Pitcher, G. ed. *Wittgenstein: The Philosophical Investigations.* Anchor, New York, 1966.

PHIL242 CONTEMPORARY CONTINENTAL PHILOSOPHY

Lecture-discussions per week - 3
Assessment: Three essays, each 2,500 words (90%); Teacher's assessment (10%)

An examination, in English translation, of some of the major influences in twentieth century philosophy in France and Germany. Special attention will be paid to the movements of phenomenology and existentialism, and the contributions of Husserl, Sartre, Merleau-Ponty, and Levi-Strauss, particularly in respect of questions of method.

TEXTBOOKS

Kockelmans, J.J. ed. *Phenomenology.* Doubleday, New York, 1967.
Sartre, J-P. *Being and Nothingness.* trans. Barnes, H. Methuen, London, 1958.

PHIL242 CONTEMPORARY CONTINENTAL PHILOSOPHY(CONT'D)

RECOMMENDED READING

Charlesworth, M.J. *The Existentialists.* Queensland University Press, St. Lucia, 1975.
Heidegger, M. *Being and Time.* Blackwell, Oxford, 1967.
Murdoch, I. *Sartre.* Fontana, London, 1967.
Solomon, R.C. *From Rationalism to Existentialism.* Harper and Row, New York, 1972.
Solomon, R.C. ed. *Existentialism.* Harper and Row, New York, 1974.
Warnock, M. *Existentialism: Studies on Kierkegaard, Nietzsche, Huesserl, Heidegger, Merleau-Ponty, and Sartre.* Oxford University Press, Oxford, 1970.
Warnock, M. *Philosophy of Sartre.* Hutchinson, London, 1965.
Warnock, M. *Sartre.* Doubleday, New York, 1971.

PHIL251 ETHICS A

Lecture-discussions per week - 3
Assessment: Tutorial assessment (10%); 1x2,500 word essay (20%); 1 three-hour examination (70%). Note: students may reduce the examination proportion to 50% by arranging to submit additional written work during the session.

A first session course in the fundamental issues of moral philosophy designed to provide an awareness of the theoretical issues basic to discussions of contemporary ethical controversies. In the first part of the session questions considered include: (1) Is morality culturally relative? (2) Are there moral facts or only moral opinions? (3) What connections are there between moral judgements and emotions such as sympathy and indignation? (4) How, if at all, can one rationally support a moral conclusion? (5) How is the morality of an act to be determined (contrasting ethics of consequences with ethics of principles)?

In the remainder of the session some contemporary ethical controversies are examined with special emphasis on the way in which the above issues relate to these controversies. Problems raised will be selected from the following: (i) the morality of taking life (suicide, euthanasia, abortion, war and terrorism, animal rights); (ii) civil disobedience and conscientious objection; (iii) crime and punishment.

NOTE: Students who wish to specialize in the Philosophy of Value are recommended to enrol also in the second session subject *Aesthetics A* (PHIL252).

TEXTBOOKS

Brandt, R. *Ethical Theory.* Prentice-Hall, Englewood Cliffs, 1959.
Feinberg, J. *Social Philosophy.* Prentice-Hall, Englewood Cliffs, 1973.
Frankena, W.K. *Ethics.* Prentice-Hall, Englewood Cliffs, 1973.
McCloskey, H.J. *Meta-Ethics and Normative Ethics.* Nijhoff, The Hague, 1969.

RECOMMENDED READING

1. For the first part of the session:

Broad, C.D. *Five Types of Ethical Theory.* Routledge and Kegan Paul, London, 1970.
Foot, P. ed. *Theories of Ethics.* Oxford University Press, Oxford, 1967.
Hare, R.M. *Freedom and Reason.* Oxford University Press, London, 1965.
Hume, D. *Enquiries Concerning the Principles of Morals.* ed. Selby-Bigge, L.A. Oxford University Press, Oxford, 1975.
Lacey, A.R. *Dictionary of Philosophy.* Routledge and Kegan Paul, London, 1976.
Mill, J.S. *Utilitarianism.* Dent, London, 1910.
Moore, G.E. *Ethics.* Oxford University Press, Oxford, 1912.
Moore, G.E. *Principia Ethica.* Cambridge University Press, Cambridge, 1959.
Nowell-Smith, P.J. *Ethics.* Penguin, Harmondsworth, 1954.
Ross, Sir William David. *The Right and the Good.* Clarendon Press, Oxford.
Smart, J.J.C. and Williams, B. *Utilitarianism: For and Against.* Cambridge University Press, Cambridge.

2. For the last part of the session:

Acton, H.B. ed. *The Philosophy of Punishment.* Macmillan, London, 1969.
Feinberg, J. *The Problem of Abortion.* Wadsworth, Belmont.
Murphy, J.G. *Civil Disobedience and Violence.* Wadsworth, Belmont, 1971.
Rachels, J. ed. *Moral Problems.* 2nd ed. Harper and Row, New York, 1975.
Regan, T. and Singer, P. eds. *Animal Rights and Human Obligations.* Prentice-Hall, Englewood Cliffs, 1976.
Singer, P. *Animal Liberation.* Cape, New York, 1976.
Wasserstrom, R.A. ed. *War and Morality.* Wadsworth, Belmont, 1970.

PHIL252 AESTHETICS A

Lecture-discussions per week - 3
Assessment: 1 three-hour examination paper (70%); 1x2,500 word essay (20%); teacher's assessment (10%)

PHIL252 AESTHETICS A(CONT'D)

An examination of concepts of natural and artistic beauty, the nature and value of a work of art, the relation between artistic creation and artistic intentions, artistic communication and aesthetic evaluation. No special artistic knowledge or practical artistic ability is presupposed. The views of the German philosopher Immanuel Kant, and of the recent Italian idealist philosopher Benedetto Croce, and in particular his version of expressionism, will be given special attention.

TEXTBOOKS

Charlton, W. *Aesthetics: An Introduction.* Hutchinson, London, 1970.
Tillman, F.A. and Cahn, S.M. eds. *Philosophy of Art and Aesthetics from Plato to Wittgenstein.* Harper and Row, New York, 1969.

RECOMMENDED READING

Bosanquet, B. *History of Aesthetic.* Allen and Unwin, London, 1964.
Collingwood, R.G. *Principles of Art.* Clarendon Press, Oxford, 1963.
Croce, B. *Aesthetic as a Science of Expression and General Linguistic.* Macmillan, London, 1922.
Gilbert, K.E. and Kuhn, H. *History of Aesthetics.* Dover, New York, 1972.
Goodman, N. *Languages of Art.* Bobbs-Merrill, Indianapolis, 1968.
Hospers, J. *Meaning and Truth in the Arts.* North Carolina University Press, Chapel Hill, 1946.
Kant, I. *Critique of Judgement.* Clarendon Press, Oxford, 1952.
Kant, I. *Observations on the Feeling of the Beautiful and the Sublime.* California University Press, Berkeley, 1960.
Lacey, A.R. *Dictionary of Philosophy.* Routledge and Kegan Paul, London, 1976.

PHIL262 EMPIRICISM A

Lecture-discussions per week - 3
Assessment: one 3 hour examination paper (80%); one essay of 2,500 words (10%); teacher's assessment (10%)

An examination in the second session of the metaphysical, epistemological and linguistic doctrines of the British Empiricists of the seventeenth and eighteenth centuries; particular attention will be given to the views of the English philosopher John Locke, the Irish philosopher George Berkeley, and the Scottish philosopher David Hume. Questions considered include (i) How do words relate to things and to ideas? (ii) Might the so-called material world exist entirely in our minds (the debate between Idealists, Representationalists, and Realists)? (iii) What is a cause? (iv) Must the world have a Creator? (v) What gives a thing or a person its identity through a period of change?

TEXTBOOKS

Armstrong, D.M. ed. *Berkeley's Philosophical Writings.* Collier-Macmillan, New York, 1965.
Hume, D. *Enquiries concerning the Human Understanding.* L.A. Selby-Bigge ed., Oxford U.P., Oxford, 1902.
Hume, D. *Treatise of Human Nature.* 2 vols. Dent, London, 1959.
Locke, J. *Essay Concerning Human Understanding.* 2 vols. Dover, New York, 1959.

RECOMMENDED READING

Aaron, R.I. *John Locke.* Oxford U.P., Oxford, 1937.
Armstrong, D.M. *Perception and the Physical World.* Routledge & Kegan Paul, London, 1961.
Chappell, V.C. ed. *Hume.* Macmillan, New York, 1968.
Hacking, I. *Why Does Language Matter to Philosophy?* Cambridge University Press, Cambridge, 1976.
Lacey, A.R. *Dictionary of Philosophy.* Routledge, London, 1976.
Mackie, J.L. *Problems from Locke.* Clarendon Press, Oxford, 1976.
Martin, C.B. & Armstrong, D.M. eds. *Locke and Berkeley.* Macmillan, New York, 1966.
Warnock, G.J. *Berkeley.* Penguin, Harmondsworth, 1959.

300-LEVEL

PHIL301 ETHICS B

Lecture-discussions per week - 3; seminars per week - one 2 hr seminar
Assessment: Teacher's assessment (10%); 1x3,000 word essay (20%); 1 three-hour examination (70%); Note: students may reduce the examination proportion to 50% by arranging to submit additional written work during the session.

A first session course for senior students in the fundamental issues of moral philosophy. Relativity, the possibility of moral knowledge, morality and emotions, morality and reasons, morality and disagreement, and principles and consequences, are among the issues considered in the first part of the session. In the latter part selected social issues relating to terminating life and law and morality are examined.

TEXTBOOKS AND RECOMMENDED READING

The same as for PHIL251 Ethics A.

PHIL302 AESTHETICS B

Lecture-discussions per week - 3; seminars per week - one 2 hr seminar
Assessment: 1 three-hour examination paper (70%); 1x3,000 word essay (20%); teacher's assessment (10%)

A second session subject for senior students concerning beauty in nature and art, artistic value, creativity and artistic intention, beauty and concepts (Kant), intuition and expression (Croce).

TEXTBOOKS

Charlton, W. *Aesthetics: An Introduction.* Hutchinson, London, 1970.
Tillman, F.A. and Cahn, S.M. eds. *Philosophy of Art and Aesthetics from Plato to Wittgenstein.* Harper and Row, New York, 1969.

RECOMMENDED READING

Bosanquet, B. *History of Aesthetic.* Allen and Unwin, London, 1964.
Collingwood, R.G. *Principles of Art.* Clarendon Press, Oxford, 1963.
Croce, B. *Aesthetic as a Science of Expression and General Linguistic.* Macmillan, London, 1922.
Gilbert, K.E. and Kuhn, H. *History of Aesthetics.* Dover, New York, 1972.
Goodman, N. *Languages of Art.* Bobbs-Merrill, Indianapolis, 1968.
Hospers, J. *Meaning and Truth in the Arts.* North Carolina University Press, Chapel Hill, 1946.
Kant, I. *Critique of Judgement.* Clarendon Press, Oxford, 1952.
Kant, I. *Observations on the Feeling of the Beautiful and the Sublime.* California University Press, Berkeley, 1960.
Lacey, A.R. *Dictionary of Philosophy.* Routledge and Kegan Paul, London, 1976.

PHIL311 KANT'S CRITIQUE OF PURE REASON

Lecture-discussions per week - 3; seminar per week - one 2 hour seminar
Assessment: One 3 hour examination paper at end of session 1 (70%); two 1,500 word essays (20%); teacher's assessment (10%)

An examination of Immanuel Kant's seminal work on the problems of metaphysics and the powers of imagination, understanding, and reason.

TEXTBOOKS

Kant, I. *Critique of Pure Reason.* trans. N. Kemp-Smith, Macmillan, London, 1929.
Wilkerson, T.E. *Kant's Critique of Pure Reason.* Clarendon Press, Oxford, 1976.

RECOMMENDED READING

Bennett, J.F. *Kant's Analytic.* C.U.P., Cambridge, 1966.
Bennett, J.F. *Kant's Dialectic.* C.U.P., Cambridge, 1974.
Kemp-Smith, N. *A Commentary to Kant's Critique of Pure Reason.* 2nd ed. Macmillan, London, 1923.
Korner, S. *Kant.* Penguin, Harmondsworth, 1955.
Penelhum, T., and MacIntosh, J.J. eds. *The First Critique.* Wadsworth, Belmont, 1969.
Strawson, P.F. *Bounds of Sense.* Methuen, London, 1966.
Wolff, R.P. ed. *Kant.* Doubleday, New York, 1968.

PHIL312 PHENOMENOLOGY AND EXISTENTIALISM

Three 1 hr lectures and one 2 hr seminar per week
Assessment: 60% - 2 essays of 3,000 words to be submitted during the session; 30% - 3 hr examination paper at the end of session 2; 10% - teacher's assessment

An introduction to and exploration of the (mainly European) movements of phenomenology and existentialism, with particular reference to the views of Edmund Husserl, Martin Heidegger, Maurice Merleau-Ponty, Jean-Paul Sartre, and Paul Ricoeur. Questions examined include the nature of consciousness, consciousness as a means of knowledge, the presuppositions of knowledge, and knowledge of oneself. The possibility, conditions for, and limitations of our knowledge of other people are also considered, together with the ethical implications.

TEXTBOOKS

Kockelmans, J.J. ed *Phenomenology.* Doubleday, New York, 1967.
Sartre, J-P. *Being and Nothingness.* Trans. H.E. Barnes. Methuen, London, 1958.
Solomon, R.C. ed. *From Rationalism to Existentialism.* Harper & Row, New York, 1972.

RECOMMENDED READING

Charlesworth, M.J. *The Existentialists.* Queensland U.P., St. Lucia, 1975.
Heidegger, M. *Being and Time.* Trans. J. MacQuarrie and E. Robinson. Blackwell, Oxford 1967.
Husserl, E. *Cartesian Meditations: an introduction to Phenomenology.* Trans. D. Cairns, Nijhoff, The Hague, 1973.
Husserl, E. *Crisis of European Sciences and Transcendental Phenomenology.* Trans. D. Carr. Northwestern U.P., Evanston, 1970.

PHIL312 PHENOMENOLOGY AND EXISTENTIALISM(CONT'D)

Husserl, E. *Idea of Phenomenology.* Trans. W.P. Alston and G. Nakhnikian. Nijhoff, The Hague, 1964.
Husserl, E. *Formal and Transcendental Logic.* Trans. D. Cairns. Nijhoff, The Hague, 1969.
Merleau-Ponty, M. *Phenomenology of Perception.* Trans. C. Smith, Routledge & Kegan Paul, London, 1962.
Ricoeur, P. *Husserl, an Analysis of his Phenomenology.* Trans. E.G. Ballard and L.E. Embree, Northwestern U.P., Evanston, 1967.
Sartre, J-P. *Psychology of Imagination.* Trans. M. Warnock. Methuen, London, 1972.
Solomon, R.C. *Existentialism.* Harper & Row, New York, 1974.
Warnock, M. *Philosophy of Sartre.* Hutchinson, London, 1965.
Warnock, M. *Existentialism: Studies on Kierkegaard, Nietzsche, Husserl, Heidegger, Merleau-Ponty, and Sartre.* Oxford U.P., Oxford, 1970.

PHIL321 LOGICAL ANALYSIS

Three 1 hr lecture-discussions and one 2 hr seminar per week
Assessment: 70% - one 3 hr paper at the end of session 1; 20% - two essays of 1,500 words due on the first academic day of the fifth and tenth weeks of session 1; 10% - teacher's assessment

This is a self-contained course dealing with the application of certain theories of logic and language to traditional philosophical problems. Topics considered include Frege's theories of the implications of identity, Russell's Theory of Descriptions, Wittgenstein's picture theory of meaning and truth, and G.E. Moore's 'commonsense' philosophy. Although not a pre-requisite for it this course coheres well with PHIL312 (Phenomenology and Existentialism).

PRELIMINARY READING

Magee, B. *Modern British Philosophy.* Secker, London, 1971.
Passmore, J. *Hundred Years of Philosophy.* Duckworth, London, 1966.

TEXTBOOKS

Ammerman, R.R. ed. *Classics of Analytic Philosophy.* McGraw-Hill, New York, 1965.
Geach, P. & Black, M. eds. *Translations from the Philosophical Writings of Gottlob Frege.* Blackwell, Oxford, 1960.
Wittgenstein, L. *Tractatus Logico-Philosophicus.* Routledge & Kegan Paul, London, 1972.

REFERENCE BOOKS

Ayer, A.J. *Russell and Moore, the Analytical Heritage.* Macmillan, London, 1972.
Black, M. *Companion to Wittgenstein's Tractatus.* Cornell, N.Y., 1964.
Copi, I.M. & Beard, R.W. eds. *Essays on Wittgenstein's Tractatus.* Routledge, London, 1966.
Dummett, M. *Frege: Philosophy of Logic.* Duckworth, London, 1973.
Klemke, E.D. *Epistemology of G.E. Moore.* Northwestern U.P., Evanston, 1969.
Klemke, E.D. *Essays on Bertrand Russell.* University of Illinois Press, Urbana, 1970.
Klemke, E.D. *Essays on Frege.* University of Illinois Press, Urbana, 1968.
Moore, G.E. *Commonplace Book 1919-53.* Allen & Unwin, London, 1962.
Moore, G.E. *Lectures on Philosophy.* Allen & Unwin, London, 1966.
Moore, G.E. *Philosophical Papers.* Allen & Unwin, London, 1959.
Moore, G.E. *Philosophical Studies.* Routledge & Kegan Paul, London, 1970.
Moore, G.E. *Some Main Problems of Philosophy.* Allen & Unwin, London, 1953.
Russell, B. *Essays in Analysis.* Lackey, D. ed., Allen & Unwin, London, 1973.
Russell, B. *Logic and Knowledge.* Marsh, R.C. ed., Allen & Unwin, London, 1956.
Russell, B. *Problems of Philosophy.* Oxford U.P., London, 1959.
Wittgenstein, L. *Notebooks 1914-16.* Blackwell, Oxford, 1961.
Wittgenstein, L. *Prototractatus.* Routledge & Kegan Paul, London, 1971.

PHIL322 EMPIRICISM B

Lecture-discussions per week - 3; seminars per week - one 2 hour seminar
Assessment: one 3 hour examination paper at the end of second session (70%); 2 essays of 1,500 words (20%); teacher's assessment - 10%

A second session study of the metaphysical and epistemological principles and doctrines of the British empiricists (John Locke, George Berkeley, and David Hume) and their relationship to contemporary philosophical issues.

TEXTBOOKS

Armstrong, D.M. ed. *Berkeley's Philosophical Writings.* Collier-Macmillan, New York, 1965.
Hume, D. *Enquiries Concerning the Human Understanding.* L.A. Selby-Bigge ed. Oxford U.P., Oxford, 1902.
Hume, D. *Treatise of Human Nature.* 2 vols. Dent., London, 1959.
Locke, J. *Essay Concerning Human Understanding.* 2 vols. Dover, New York, 1959.

PHIL322 EMPIRICISM B(CONT'D)

RECOMMENDED READING

Aaron, R.I. *John Locke.* Oxford U.P., Oxford, 1937.
Armstrong, D.M. *Perception and the Physical World.* Routledge & Kegan Paul, London, 1961.
Chappell, V.C. ed. *Hume.* Macmillan, New York, 1968.
Hacking, I. *Why Does Language Matter to Philosophy?* Cambridge University Press, Cambridge, 1976.
Lacey, A.R. *Dictionary of Philosophy.* Routledge, London, 1976.
Mackie, J.L. *Problems from Locke.* Clarendon Press, Oxford, 1976.
Martin, C.B. & Armstrong, D.M. eds. *Locke and Berkeley.* Macmillan, New York, 1966.
Warnock, G.J. *Berkeley.* Penguin, Harmondsworth, 1959.

PHIL323 CONTEMPORARY ANALYTICAL PHILOSOPHY

Three 1 hr lecture-discussions and one 2 hr seminar per week
Assessment: 70% - one 3 hr paper at the end of session 2; 20% - two essays of 3,000 words, due on the first academic day of the ninth week of each session; 10% - teacher's assessment

This course examines the foundations of the most important parts of contemporary philosophy. In the first session the programme of analysis is introduced, first by way of the late nineteenth century German philosopher Gottlob Frege's revolutionary work on sense, reference, concepts, number, and existence, then through the logical atomism of Bertrand Russell and the early Ludwig Wittgenstein, and the 'commonsense' philosophy of G.E. Moore. In the second session attention is focused exclusively on the so-called twentieth century 'linguistic revolution' in philosophy, which centres on the work of the later Wittgenstein. Wittgenstein's major contributions to theory of meaning, the problems of perception and of other minds, and - especially - Wittgenstein's views about the way in which language relates to mental processes, will be evaluated.

PRELIMINARY READING

Magee, B. *Modern British Philosophy.* Secker, London, 1971.
Passmore, J. *Hundred Years of Philosophy.* Duckworth, London, 1966.

TEXTBOOKS

Ammerman, R.R. ed. *Classics of Analytic Philosophy.* McGraw-Hill, New York, 1965.
Geach, P. & Black, M. eds. *Translations from the Philosophical Writings of Gottlob Frege.* Blackwell, Oxford, 1960.
Wittgenstein, L. *Philosophical Investigations.* Blackwell, Oxford, 1953.
Wittgenstein, L. *Tractatus Logico-Philosophicus.* Routledge & Kegan Paul, London, 1972

RECOMMENDED READING

Ayer, A.J. *Russell and Moore: the Analytical Heritage.* Macmillan, London, 1972.
Bambrough, R. ed. *Wisdom, Twelve Essays.* Blackwell, Oxford, 1974.
Dummett, M. *Frege: Philosophy of Logic.* Duckworth, London, 1973.
Kenny, A. *Wittgenstein.* Penguin, Harmondsworth, 1973.
Klemke, E.D. *Essays on Bertrand Russell.* University of Illinois Press, Urbana, 1970.
Klemke, E.D. *Essays on Frege.* University of Illinois Press, Urbana, 1968.
Klemke, E.D. *Essays on Wittgenstein.* University of Illinois Press, Urbana, 1971.
Moore, G.E. *Commonplace Book 1919-53.* Allen & Unwin, London, 1962.
Moore, G.E. *Lectures on Philosophy.* Allen & Unwin, London, 1966.
Moore, G.E. *Philosophical Papers.* Allen & Unwin, London, 1959.
Moore, G.E. *Philosophical Studies.* Routledge & Kegan Paul, London, 1970.
Moore, G.E. *Some Main Problems of Philosophy.* Allen & Unwin, London, 1953.
Russell, B. *Essays in Analysis.* Lackey, D. ed. Allen & Unwin, London, 1973.
Russell, B. *Logic and Knowledge.* Marsh, R.C. ed. Allen & Unwin, London, 1956.
Russell, B. *Problems of Philosophy.* Oxford U.P., London, 1959.
Wisdom, J. *Philosophy and Psychoanalysis.* Blackwell, London, 1953.
Wittgenstein, L. *Blue and Brown Books.* Blackwell, Oxford, 1969.
Wittgenstein, L. *Lectures and Conversations on Aesthetics, Psychology, and Religious Beliefs.* Barrett, C. ed. Blackwell, Oxford, 1966.
Wittgenstein, L. *Letters to C.K. Ogden.* Routledge & Kegan Paul, London, 1973.
Wittgenstein, L. *Notebooks 1914-16.* Blackwell, Oxford, 1961.
Wittgenstein, L. *On Certainty.* Blackwell, Oxford, 1974.
Wittgenstein, L. *Philosophical Grammar.* Blackwell, Oxford, 1974.
Wittgenstein, L. *Prototractatus.* Routledge & Kegan Paul, London, 1971.
Wittgenstein, L. *Remarks on the Foundations of Mathematics.* Blackwell, Oxford, 1960.
Wittgenstein, L. *Zettel.* Blackwell, Oxford, 1967.

PHIL332 POLITICAL PHILOSOPHY B

Lecture-discussions per week - 3; seminars per week - one 2-hour seminar
Assessment: One 3-hour examination at the end of session 2. Two 2,500 word essays. The proportion of marks will be determined by the class during the first contact hour. The exam will be at least 50% of marks, the exam and essays together will be 90% of marks. 10% will be tutor's assessment.

PHIL332 POLITICAL PHILOSOPHY B(CONT'D)

The course has three basic aims. (1) To find the essential differences between conservative, liberal, and radical political philosophies. (2) To find the claims and assumptions which explain these differences. (3) To critically examine these claims and assumptions. The relevant writings of Plato, Aristotle, Hobbes, Locke, Rousseau, Marx and Engels, among others, will be discussed.

TEXTBOOKS

Aristotle. *Politics.* Penguin, Harmondsworth, 1972.
Hobbes, T. *Leviathan.* ed. Oakeshott, M., Collier Books, New York, 1967.
Locke, J. *Two Treatises on Civil Government.* Dent, London, 1924.
McClellan, D. *The Thought of Karl Marx.* Macmillan, London, 1971.
Marx, K. & Engels, F. *The Marx-Engels Reader.* Norton, New York, 1972.
Plamenatz, J. *Man & Society.* 2 Vols. Longman, London, 1967.
Plato. *The Republic.* 2nd ed. Penguin, Harmondsworth, 1975.
Raphael, D.D. *Problems of Political Philosophy.* Macmillan, London, 1970.
Rousseau, J.J. *The Social Contract.* Dent, London, 1973.

RECOMMENDED READING

Acton, H.B. *The Illusion of the Epoch.* Routledge & Kegan Paul, London, 1973.
Avineri, S. *The Social and Political Thought of Karl Marx.* C.U.P., Cambridge, 1971.
Barker, Sir Ernest. *The Political Thought of Plato and Aristotle.* Dover, New York.
Benn, S.I. and Peters, R.S. *Social Principles and the Democratic State.* Allen & Unwin, London, 1969.
Gauthier, D.P. *The Logic of Leviathan.* O.U.P., Oxford, 1969.
Gough, J.W. *John Locke's Political Philosophy.* O.U.P., Oxford.
Hall, J.C. *Rousseau: An Introduction to his Political Philosophy.* Macmillan, London, 1973.
Hume, D. *Of the Original Contract* in *Hume's Ethical Writings.* ed. MacIntyre, A., Collier, New York, 1965.
Lucas, J.R. *The Principles of Politics.* O.U.P., Oxford, 1967.
Popper, K. *The Open Society and its Enemies.* 2 vols. 5th ed. Routledge & Kegan Paul, London, 1973.
Wolin, S.S. *Politics and Vision.* Little, Brown & Company, Boston, 1960.

PHIL351 FORMAL LOGIC I

Lecture-discussions per week - 3; seminar per week - 1 (2hr)
Assessment: One 3 hr examination paper (40%); 4 written assignments (40%); teacher's assessment (20%)

A rigorous and critical treatment of the fundamentals of logic and meta-logic. A working knowledge of the propositional calculus and predicate calculus is assumed, together with a modest acquaintance with set theory.

TEXTBOOK

Mendelson, E. *Introduction to Mathematical Logic.* Van Nostrand, Princeton, 1964.

RECOMMENDED READING

Hintikka, J. ed. *The Philosophy of Mathematics.* Oxford University Press, Oxford, 1969.

PHIL352 FORMAL LOGIC II

Lecture-discussions per week - 3; seminar per week - 1 (2 hr)
Assessment: One 3 hr examination paper (40%); 4 written assignments (40%); teacher's assessment (20%)

Major technical features of number theory; decidability and undecidability, and associated topics.

TEXTBOOK

Mendelson, E. *Introduction to Mathematical Logic.* Van Nostrand, Princeton, 1964.

RECOMMENDED READING

Wang, H. *From Mathematics to Philosophy.* Routledge and Kegan Paul, London, 1974.

400-LEVEL

PHIL403 PHILOSOPHY HONOURS

Five 2 hr seminars and 1 hr of personal supervision per week
Pre-requisite: Entry to Honours is determined by the Academic Senate on the advice of the Departmental Chairman. Applicants who have 'majored' in Philosophy with distinction will normally be

PHIL403 PHILOSOPHY HONOURS(CONT'D)

recommended; however, the Chairman may, in respect of any applicant, request written work and/or the opinions of the applicant's previous teachers as further evidence of the applicant's capacity to undertake the study of Philosophy at an advanced level.

Method of Assessment: 10% - 3 hr examination paper at the end of session 1 on the Chosen Authority; 20% - dissertation of 6,000 words on the Chosen Authority, due on the last academic day of the sixth week of session two; 70% - four 3 hr examination papers at the end of session 2, one on each of the candidate's electives. One essay of no more than 2,000 words is required in each of the electives on the last academic day of the first session. (Their purpose is primarily pedagogical, however they will be taken into account if the candidate's examination performance in the relevant elective(s) is just below the level of a particular grade.) All candidates must attend for a viva voce examination on any or all of the areas of their course unless expressly exempted by the examiners.

Outline of Syllabus:

1. PHILOSOPHICAL INQUIRY SEMINAR

   A weekly two hour staff-student seminar on work in progress and current issues. Honours candidates are expected to attend regularly and to participate from time to time with short discussion papers.

2. CHOSEN AUTHORITY

   All candidates must make a sustained and semi-independent study of the work of a major philosopher. The choice of philosopher is subject to the availability of a member of the department willing and able to supervise and/or assess the candidate's progress, and the accessibility of a substantial proportion of the philosopher's writings. Examples of choices likely to be approved are Plato, Aristotle, Kant, Russell, Wittgenstein, Quine, and Sartre. The candidate must show a general knowledge of the chosen philosopher's contribution at a three hour examination at the end of session 1, and must also submit during session 2, a 6,000 word essay on some specific topic to which the chosen authority has contributed.

3. ELECTIVES

   Candidates must regularly attend and participate in *at least four* of the following weekly two hour seminars, and must take one 3 hour paper in *each of four* at the end of session 2. (Not every seminar will be offered in every year.)

PHILOSOPHY OF LANGUAGE

An enquiry into the goals, methods, and achievements of contemporary philosophical approaches to such topics as ordinary language analysis, pragmatics and semantics.

PRELIMINARY READING

Alston, W.P. *Philosophy of Language.* Prentice-Hall.
Austin, J.L. *How to Do Things With Words.* Oxford U.P.
Evans, G. & McDowell, J. eds. *Truth and Meaning.* Oxford U.P.
Zebeeh, F., Klemke, E.D. & Jacobson, A. eds. *Readings in Semantics.* University of Illinois Press.

RECOMMENDED READING

Austin, J.L. *Philosophical Papers.* Oxford U.P.
Bar-Hillel, Y. ed. *Pragmatics of Natural Language.* Reidel.
Carnap, R. *Introduction to Semantics and Formalization of Logic.* Harvard U.P.
Carnap, R. *The Logical Syntax of Language.* Routledge & Kegan Paul.
Carnap, R. *Meaning and Necessity.* University of Chicago Press.
Chappell, V.C. ed. *Ordinary Language.* Prentice-Hall.
Davidson, D. & Harman, G. eds. *Semantics of Natural Language.* Reidel.
Fann, K.T. ed. *Symposium on J.L. Austin.* Routledge & Kegan Paul.
Guttenplan, S. ed. *Mind and Language.* Oxford U.P.
Hacking, I. *Why Does Language Matter to Philosophy?* Cambridge U.P.

PHILOSOPHY OF VALUE

An examination of contemporary discussions of selected problems in ethics, aesthetics, and moral psychology, against the background of a detailed examination of two of Aristotle's major contributions.

PRELIMINARY READING

Aldrich, V.T. *Philosophy of Art.* Prentice-Hall.
Frankena, W. *Ethics.* Prentice-Hall.

TEXTBOOKS

Aristotle. *Nicomachean Ethics.* Trans. and intro. by Ross, W.D., Oxford U.P. (or any other edition.)
Aristotle. *Poetics.* Trans. and intro. by Warrington, J., Dent (or any other edition.)
Osborne, H. ed. *Aesthetics.* Oxford U.P.
Wertheimer, R. *Significance of Sense: Meaning, Modality, and Morality.* Methuen.

RECOMMENDED READING

Baier, K. *Moral Point of View.* Cornell U.P.
Beardsmore, R.W. *Art and Morality.* Macmillan.
Bosanquet, B. *History of Aesthetic.* Allen & Unwin.
Donnie, R.S. *Roles and Values.* Methuen.
Findlay, J.N. *Axiological Ethics.* Macmillan.
Gauthier, D.P. ed. *Morality and Rational Self-Interest.* Prentice-Hall.
Gosling, J.C.B. *Pleasure and Desire: the Case for Hedonism Reviewed.* Oxford U.P.
Kovesi, J. *Moral Notions.* Routledge & Kegan Paul.
Murdoch, I. *Sovereignty of Good.* Routledge & Kegan Paul.
Toulmin, S. *An Examination of the Place of Reason in Ethics.* Cambridge U.P.
Wilson, J. *Reason and Morals.* Cambridge U.P.
Wollheim, R. *On Art and The Mind.* Allen Lane.

SOCIAL, LEGAL AND POLITICAL PHILOSOPHY

An examination in the light of three classical texts, of a selection of current controversies relating to such issues as the proper form and extent of government, political ideals (e.g. equality, justice), and the function, nature and legitimacy of law.

PRELIMINARY READING

Lloyd, D. *The Idea of Law.* Penguin.
Mabbott, J.D. *The State and the Citizen.* Hutchinson.

TEXTBOOKS

Aristotle. *Politics.* Trans. by Warrington, J., Dent (or any other edition.)
Dworkin, R. *Political Jurisprudence.* Duckworth.
Nozick, R. *Anarchy, State, and Utopia.* Blackwell.
Plato. *Laws.* Trans. by Jowett, B., Sphere Books (or any other edition.)
Singer, P. *Animal Liberation.* Cape.

RECOMMENDED READING

Bedau, H.A. ed. *Justice and Equality.* Prentice-Hall.
Golding, M. *Philosophy of Law.* Prentice-Hall.
Held, V., Nielsen, K. & Parsons, C. eds. *Philosophy and Political Action.* Oxford U.P.
Pitkin, H.F. *Wittgenstein and Justice.* University of California Press.
Plamenatz, J.P. *Consent, Freedom and Political Obligation.* Oxford U.P.
Plamenatz, J.P. *Democracy and Illusion.* Longman.
Quinton, A. ed. *Political Philosophy.* Oxford U.P.
Rawls, J. *A Theory of Justice.* Oxford U.P.
Wilson, J. *Equality.* Hutchinson.

MENTAL PHILOSOPHY

A study of a selection of philosophical problems relating to the nature of the human person, the characteristics of mind and perception, and issues to do with action and agency.

PRELIMINARY READING

Shaffer, J. *Philosophy of Mind.* Prentice-Hall.

TEXTBOOKS

Feinberg, J. ed. *Doing and Deserving: Essays in the Theory of Responsibility.* Princeton University Press.
Harman, G. *Thought.* Princeton University Press.
Vendler, Z. *Res Cogitans, an Essay in Rational Psychology.* Cornell U.P.

RECOMMENDED READING

Aristotle. *De Anima.* (Any translation).
Armstrong, D.M. *A Materialist Theory of the Mind.* Routledge.
Cornman, J.W. *Materialism and Sensations.* Yale U.P.
Danto, A.C. *Analytical Philosophy of Action.* Cambridge U.P.
Goldman, A.I. *Theory of Human Action.* Prentice-Hall.
Langford, G. *Human Action.* Macmillan.
Marras, A. ed. *Intentionality, Mind, and Language.* University of Illinois Press.
Rosenthal, D.M. *Materialism and the Mind-Body Problem.* Prentice-Hall.
Ryle, G. *The Concept of Mind.* Penguin.
Thalberg, I. *Enigmas of Agency.* Allen & Unwin.
White, A.R. ed. *The Philosophy of Action.* Oxford U.P.

ONTOLOGY

An investigation of a selection of theories to do with the concept of existence, existential inferences, and alternative general theories of reality.

PRELIMINARY READING

Taylor, R. *Metaphysics.* Prentice-Hall.

TEXTBOOKS

Aristotle. *Metaphysics.* Trans. by Warrington, J., Dent.
Quine, W.V. *Word and Object.* Wiley.
Strawson, P.F. *Individuals.* Methuen.
Strawson, P.F. *Subject and Predicate.* Methuen.

RECOMMENDED READING

Aaron, R.I. *Theory of Universals.* Oxford U.P.
Chihara, C.S. *Ontology and the Vicious Circle Principle.* Cornell U.P.
Davidson, D. & Hintikka, J. eds. *Words and Objections.* Reidel.
Geach, P.T. *Reference and Generality.* Cornell U.P.
Leibniz, G.W. *Philosophical Writings.* Trans. and ed. by Morris, M., Dent.
Lewis, D. *Counterfactuals.* Blackwell.
Louz, M.J. ed. *Universals and Particulars.* Doubleday.
Margolis, J. ed. *Fact and Existence.* Blackwell.
Quine, W.V. *Ontological Relativity and Other Essays.* Columbia U.P.
Quine, W.V. *Philosophy of Logic.* Prentice-Hall.
Schock, R. *Logics Without Existence Assumptions.* Almqvist.
Strawson, P.F. *Logico-Linguistic Papers.* Methuen.
Wiggins, D. *Identity and Spatio-Temporal Continuity.* Blackwell.
Zabeeh, F. *Universals.* Nijhoff.

EPISTEMOLOGY AND METHODOLOGY

An examination of a selection of problems to do with the justification of belief, the conditions for knowledge, and erecting, testing, confirming and falsifying hypotheses.

PRELIMINARY READING

Chisholm, R. *Theory of Knowledge.* Prentice-Hall.
Hempel, C. *Philosophy of Natural Science.* Prentice-Hall.
Salmon, W. *Logic.* Prentice-Hall.

TEXTBOOKS

Ayer, A.J. *Probability and Evidence.* Macmillan.
Swinburne, R. *Introduction to Confirmation Theory.* Methuen.
Unger, P. *Ignorance.* Oxford U.P.
Wittgenstein, L. *On Certainty.* Blackwell.

RECOMMENDED READING

Achinstein, P. *Law and Explanation.* Oxford U.P.
Ackermann, R. *Belief and Knowledge.* Macmillan.
Barker, S.F. *Induction and Hypothesis.* Cornell U.P.
Braithwaite, R.B. *Scientific Explanation.* Cambridge University Press.
Carnap, R. *The Logical Foundations of Probability.* Routledge & Kegan Paul.
Cohen, L.J. *Implications of Induction.* Methuen.
Cohen, M.R. *Reason and Nature.* Collier-Macmillan.
Hacking, I. *The Logic of Statistical Inference.* Cambridge U.P.
Hanson, N.R. *Constellations and Conjectures.* Reidel.
Harré, R. *Principles of Scientific Thinking.* Macmillan.
Mackie, J.L. *Truth, Probability and Paradox.* Oxford U.P.
Reichenbach, H. *Experience and Prediction.* Chicago U.P.
Smart, J.J.C. *Philosophy and Scientific Realism.* Routledge & Kegan Paul.
Wright, G.H.V. *The Logical Problem of Induction.* Blackwell.

ADVANCED FORMAL LOGIC

A selection of advanced topics in formal logic. Students are assumed to have already mastered logic to the level of Mendelson, E., *Introduction to Mathematical Logic,* Van Nostrand.

PRELIMINARY READING

Crossley, J.N., Ash, C.J., et al. *What is Mathematical Logic.* Oxford U.P.

TEXTBOOKS

These (if any) will be selected by the teacher.

RECOMMENDED READING

Beth, E.W. *Aspects of Modern Logic.* Reidel.
Beth, E.W. *Formal Methods.* Reidel.
Church, A. *Introduction to Mathematical Logic.* Vol. I. Princeton U.P.
Feys, R. & Fitch, F.B. eds. *Dictionary of Symbols of Mathematical Logic.* North-Holland.
Fraenkel, A.A., Bar-Hillel, Y. & Levy, A. *Foundations of Set Theory.* North-Holland.
Hackstaff, L.H. *Systems of Formal Logic.* Reidel.
Hughes, G.E. & Cresswell, M.J. *Introduction to Modal Logic.* Methuen.
Kreisel, G. & Krivine, L.J. *Elements of Mathematical Logic: Model Theory.* North-Holland.
Robinson, A. *Introduction to Model Theory and to the Metamathematics of Algebra.* North-Holland.
Steen, S.W.P. *Mathematical Logic, with special reference to the Natural Numbers.* Cambridge U.P.
Tarski, A., Mostowski, A. & Robinson, R.M. *Undecidable Theories.* North-Holland.
Zeman, J. *Modal Logic: the Lewis-Modal Systems.* Oxford U.P.
Zinov'ev. *Philosophical Problems of Many-Valued Logic.* Reidel.

PHYSICS

SCHEDULE ENTRIES

Refer to Schedules A and E-2 for approved details of the subjects described in this section. Subjects which also appear in other schedules are:

Subject	*Schedules*
PHYS141	C,D & E-1
PHYS142	C,D & E-1
PHYS201	E-1
PHYS205	C & E-1
PHYS215	E-1
PHYS220	C
PHYS225	E-1
PHYS235	E-1

100-LEVEL

PHYS141 FUNDAMENTALS OF PHYSICS A

42 hrs lectures, 14 hrs tutorials and 28 hrs laboratory
Assessment: Will be carried out according to performance in homework assignments, practical work, tests and sessional examinations.

Vectors; Vector Algebra; Motion in One Dimension; Motion in a Plane, Particle Dynamics; Work and Energy; Conservation of Energy; Conservation of Momentum; Collisions; Rotational Kinematics; Rotational Dynamics; Conservation of Angular Momentum; Equilibrium of Rigid Bodies; Gravitation; Elasticity; Temperature; Heat and the First Law; Kinetic Theory of Gases; Heat and the Second Law; Fluid Statics; Fluid Dynamics.

TEXTBOOK

Resnick, R. & Halliday, D. *Physics.* Vol. 1. Wiley (Paperback).

RECOMMENDED READING

Marion, J.B. *A Universe of Physics; A Book of Readings.* Wiley (Paperback).

PHYS142 FUNDAMENTALS OF PHYSICS B

42 hrs lectures, 14 hrs tutorials and 28 hrs laboratory
Assessment: The same as for PHYS141

Charge and Matter; Electric Field; Gauss' Law; Electric Potential; Capacitance; Current and Resistance; Emf and Circuits; Magnetic Fields; Ampere's Law; Faraday's Law; Inductance; Simple Harmonic Motion; Waves; Reflection and Refraction; Interference; Diffraction; Polarization; Optical Instruments; Quantum Physics; Waves and Particles; Atomic Physics; The Bohr Atom; Special Relativity; Nuclear Physics.

TEXTBOOKS

Resnick, R. & Halliday, D. *Physics.* Vol. 2 Wiley (Paperback).

NOTE: For students taking both PHYS141 and PHYS142:
Resnick, R. & Halliday, D. *Physics.* Combined Edition. Wiley (Paperback).

RECOMMENDED READING

Marion, J.B. *A Universe of Physics; A Book of Readings.* Wiley (Paperback).

PHYS151 THE ART OF PHYSICS

28 hrs lectures, 14 hrs tutorials and 14 hrs laboratory - demonstrations
Assessment: Continuous assessment through quizzes, laboratory participation and home project reports.

This subject consists of five independent parts. The content of each topic is indicated below.

SOLAR SYSTEM ASTRONOMY

Planetary Motion; Moon Phases; The Zodiac; The Seasons; Sun; Moon; Planets; Comets; Meteorites.

PHYSICS OF CAR AND RACE TRACK

Speed, Velocity; Acceleration; Force; Torque; Friction; Lubrication with Application to Car Systems; Motion in a Circle; Energy; Power; Heat; Thermodynamic Efficiency with Application to Efficiency of Engines.

PHYSICS OF COMMUNICATION

Electric Charges and Currents; Electric and Magnetic Fields with Applications to Modern Devices; Electromagnetic Waves with Consideration of Radio and TV Transmission.

MODERN PHYSICS

Relativity; Atomic Structure; Nuclear Forces and Energy with Modern Applications.

ASTROPHYSICS

Stars, Galaxies; Unusual Extra-terrestrial Objects.

TEXTBOOKS

Each student may choose, according to her/his own preference, *one* text from:
Ballif, J. & Dibble, W. *Physics: Fundamentals and Frontiers.* Wiley, 1972.
Highsmith, P.E. *Physics, Energy and Our World.* Saunders, 1975 or later edition.
And *one* text from:
Nicolson, I. *Knowledge Through Color: Astronomy.* Bantam, 1972 (Paperback).
Rosemergy, J.G. *Celestial Horizons.* Allyn and Bacon, 1977.

RECOMMENDED READING

Marion, J.B. *A Universe of Physics; A Book of Readings.* Wiley, 1970.

200-LEVEL

PHYS201 INTERMEDIATE PHYSICS A

98 hrs lectures, 14 hrs tutorials and 56 hrs practical
Assessment: Each section (see below) will be assessed separately and a final evaluation determined using a weighting factor based on contact hours. The individual assessments will be made using an appropriate combination of performance in homework assignments, tests, laboratory and sessional examinations.

The subject consists of electricity and magnetism, modern physics, mechanics and practical classes. The topics, and their disposition, are as follows:

ELECTRICITY AND MAGNETISM (First session topic; 28 hrs lectures and 7 hrs tutorials)

Vector Algebra and Calculus; Electrostatics; Electric Field and Potential; Electric Dipole; Charge Cluster; Integral and Differential Forms of Gauss' Law; Poisson's and Laplace's Equations; Method of Electrostatic Images; Dielectric Theory; Polarization Fields; Electrical Susceptibility and Dielectric Constant; Boundary Conditions; Cavities; Claussius-Mossotti Equation; Electrostatic Energy; Forces on Charge Distributions; Magnetostatics; Ampere's Law; $\vec{B}$; Lorentz Force; Magnetic Vector Potential; Integral and Differential Form of Ampere's Law; Magnetic Dipole; Magnetic Properties of Matter; Magnetization; $\vec{H}$; Dia- and Paramagnetism; Boundary Conditions; Electromagnetic Induction; Differential Form of Faraday's Law; Self and Mutual Induction; Electric Current; Equation of Continuity; Maxwell's Equations; Direct Current Circuits; Transients; Alternating Current Circuits.

TEXTBOOK

Shadowitz, A. *The Electromagnetic Field.* McGraw-Hill, 1975.

MODERN PHYSICS (Double session topic; 42 hrs lectures)

Special Theory of Relativity; The Experimental Basis of Relativity; Alternate Theories; Lorentz Transformations; Consequences for the Measurement of Length, Time, Energy and Mass; Quantum Effects; Constituents and Structure of the Atom; Wave Particle Duality; Black Body Radiation; Photo-electric Effect; Pair Production; Bremsstrahlung; Compton Effect; Production, Scattering and Absorption of X-rays; de Broglie Hypothesis; Diffraction of Particles; Quantum Mechanics; Wave Packets; Uncertainty Principle; Schrödinger Equation; Correspondence Principle; Particle in a Box; Qualitative Description of the Wave Functions of the Hydrogen Atom; Discovery and Properties of $\alpha, \beta, \gamma, n, p, \nu$; Decay Laws; Binding Energies of Nucleons; Nuclear Reactions; Fission and Fusion; Cosmic Rays; Origin of the Elements; Statistical Distribution Functions; Particle in a Periodic Potential; Energy Bands; Impurity States; Physics of the p-n Junction and Transistor.

TEXTBOOK

Acosta, V., Cowan, L. & Graham, B.J. *Essentials of Modern Physics.* Harper International, 1973.

MECHANICS (Second session topic; 28 hrs lectures and 7 hrs tutorials)

Vector Calculus; Kinematics of a Particle; Dynamics of a Particle; Moving Reference Systems; Central Forces; Dynamics of a System of Particles; Mechanics of Rigid Bodies; Lagrange's Equations.

PHYS201 INTERMEDIATE PHYSICS A(CONT'D)

TEXTBOOK

Fowles, G.R. *Analytical Mechanics.* Holt, Rinehart and Winston.

EXPERIMENTAL (First session topic; 56 hrs laboratory)

Errors; Direct Reading Potentiometer; E.M.F. of Thermo-Couples by Potentiometric Method; Sensitivity of the Galvanometer; Use of the Ballistic Galvanometer; Measurement of the Magnetisation of Iron; Velocity of Sound in Air by Stationary Waves; Determination of C_p/C_v for Air; Variation of Boiling Point with Pressure; Thermal Conductivity of a Bad Conductor and Glass Tubing; Experiments on Polarized Light; Microwave Optics.

PHYS211 INTERMEDIATE PHYSICS B

112 hrs lectures and 56 hrs practical
Assessment: Same as PHYS201

The subject consists of thermodynamics, kinetic theory, vibrations, waves, optics, electronics and practical classes. These topics and their disposition, are as follows:

THERMODYNAMICS AND KINETIC THEORY (Double session topic; 28 hrs lectures)

Thermodynamic Systems; Equations of State; Work; The First Law of Thermodynamics and its consequences; the Second Law of Thermodynamics; Entropy; Combined First and Second Laws; Thermodynamic Potentials; Applications of Thermodynamics including black bodies, voltaic cells and thermo-electric effects; Kinetic Theory of the Ideal Gas; The Distribution of Molecular Velocities.

TEXTBOOK

Sears, F.W. and Salinger, G.L. *Thermodynamics, Kinetic Theory and Statistical Thermodynamics.* 3rd ed. Addison-Wesley.

VIBRATIONS, WAVES AND OPTICS (Double session topic; 42 hrs lectures)

Simple Harmonic Motion; Two Body Oscillations; Damped Harmonic Oscillator; Power Dissipation; Quality Factor; Driven Harmonic Oscillator; Superposition Principle; Superposition of Vibrations; Fourier Analysis; Waves; Huygen's Principle; Laws of Reflection and Refraction; Analytical Treatment of Wave Motion; Sinusoidal Waves; Group Velocity; Dispersion; Young's Experiment; Interference; Coherence; Stokes' Treatment of Reflection and Refraction; Interference involving Multiple Reflections; Applications; Standing Waves; Fabry-Perot; Interferometer; Michelson Interferometer; Fourier Spectroscopy; Fresnel Diffraction; Fraunhofer Diffraction; Resolving Power of Optical Instruments; Chromatic Resolving Power; Diffraction Grating; Holography; Polarization of Waves; Double Refraction; Interference of Polarized Light.

TEXTBOOKS

French, A.P. *Vibrations and Waves.* Norton, 1971. (Paperback).
Jenkins, F.A. & White, H.E. *Fundamentals of Optics.* 4th ed. McGraw-Hill, 1975.

ELECTRONICS (Double session topic; 42 hrs lectures)

This topic is offered by the Department of Electrical Engineering as ELEC211 Electronics 1. See Electrical Engineering entry for details.

EXPERIMENTAL (Second session topic; 56 hrs Laboratory)

Photo-Electric Effect; Spectrum of Hydrogen Atom; Determination of e/m; A.C. Circuits; Measurement of Mutual Inductance; Electric Circuits; Newton's Rings; Fresnel Bi-Prism; Diffraction Grating; Resolving Power of Telescope.

PHYS220 INTERMEDIATE PHYSICS FOR ENGINEERS

112 hrs lectures and 56 hrs practical
Assessment: Same as for PHYS201

This subject consists of material selected from PHYS201 and PHYS211 as follows:

Electricity and Magnetism and Modern Physics from PHYS201
Vibrations, Waves and Optics and Experimental from PHYS211

PHYS205 MODERN PHYSICS

42 hrs lectures and 42 hrs practical
Assessment: Same as for PHYS201

Consists of the modern physics section of PHYS201 and 10 experiments selected from the experimental sections of PHYS201 and PHYS211.

PHYS215 VIBRATIONS, WAVES AND OPTICS

42 hrs lectures and 42 hrs practical
Assessment: Same as for PHYS201

Consists of the vibrations, waves and optics section of PHYS211 and 10 experiments selected from the experimental sections of PHYS201 and PHYS211.

PHYS225 INTERMEDIATE ELECTRICITY AND MAGNETISM

28 hrs lectures; 7 hrs tutorial and 49 hrs practical
Assessment: Same as for PHYS205

Consists of the electromagnetism section of PHYS201 and 12 experiments selected from the experimental sections of PHYS201 and PHYS211.

PHYS235 MECHANICS AND THERMODYNAMICS

56 hrs lectures, 7 hrs tutorials and 21 hrs practical
Assessment: Same as for PHYS205

Consists of the mechanics section of PHYS201 and thermodynamics and kinetic theory section of PHYS211. Also contains 5 experiments selected from the experimental section of PHYS201 and PHYS211.

PHYS244 MODERN PHYSICS, VIBRATIONS, WAVES AND OPTICS

84 hrs lectures and 28 hrs practical
Assessment: Same as for PHYS205

Consists of the modern physics section of PHYS201 and vibrations, waves and optics section of PHYS211. Also contains 7 experiments selected from the experimental sections of PHYS201 and PHYS211.

PHYS248 ASTRONOMY

42 hrs lectures, 14 hrs tutorials and 28 hrs practical
Assessment: Performance in the course is assessed from laboratory work and sessional examinations.

Deep-Sea Navigation; The Celestial Sphere; Position Lines; The Computation of the Deep-Sea Position; Celestial Mechanics; Newton's Laws; Derivation of Kepler's Laws; Position and Motion in an Orbit; The Solar System; The Sun; Stellar Positions, Distances and Masses; Photometry and Spectroscopy; Stellar Spectral Classification; Nuclear Reactions in Stars; Formation of Elements; Hertzsprung-Russell Diagram; Equations of Stellar Structure; Stellar Evolution; Galactic and Extra-Galactic Astronomy; Structure of our Galaxy; Classification and Evolution of Galaxies; Exploding Galaxies, Quasars and Black Holes; Cosmology; Outstanding Problems.

TEXTBOOK

Smith, E.P. & Jacobs, K.C. *Introductory Astronomy and Astrophysics.* Saunders, 1973.

300-LEVEL

PHYS301 CLASSICAL MECHANICS AND ELECTROMAGNETISM

56 hrs lectures and 28 hrs tutorials
Assessment: Each section (see below) will be assessed separately and given equal weight. The assessments will depend upon performance in homework assignments, tests and sessional examinations.

PHYS301 CLASSICAL MECHANICS AND ELECTROMAGNETISM (CONT'D)

The subject consists of classical mechanics and electromagnetism with the following syllabus:

CLASSICAL MECHANICS (28 hrs lectures and 14 hrs tutorials)

Vectors and Matrices; The Special Theory of Relativity; Motion in a Non-inertial Frame; Dynamics of Rigid Bodies; Euler's Angles; Euler's equations and applications; Small Oscillations; Normal Modes; Perturbation Theory; Wave Equation; Dispersion and Attenuation; Non-linear Oscillations.

TEXTBOOK

Marion, J.B. *Classical Dynamics of Particles and Systems.* Academic International Ed. (Paperback).

ELECTROMAGNETISM (28 hrs lectures and 14 hrs tutorials)

Review; Maxwell's Equations; Boundary Conditions; Reflection and Refraction; Transmission Lines; Wave Guides and Cavity Resonators; Electrodynamics; Radiation; Advanced and Retarded Potentials; Lienard-Wiechert Potentials; Accelerated Charges; Dipole and Half-Wave Antennae.

TEXTBOOK

Shadowitz, A. *The Electromagnetic Field.* McGraw-Hill, 1975.

PHYS302 CLASSICAL MECHANICS, ELECTROMAGNETISM AND PLASMA PHYSICS

70 hrs lectures and 42 hrs tutorials
Assessment: Each section (see below) will be assessed separately and given weight proportionate to contact hours of lectures.

The subject consists of the Classical Mechanics and Electromagnetism section of PHYS301.

AND

PLASMA PHYSICS (14 hrs lectures and 14 hrs tutorials)

Occurrence and Production of Plasmas; Langmuir Probe; Measurement of Plasma Properties; Arc Plasmas; Pinch Effect and Instabilities; Debye Screening; Plasma Oscillations; Surface Waves in a Metallic Plasma; Fourier Analysis of Maxwell's Equations; Dielectric Tensor; Dispersion Relation; Landau Damping; Solutions of Maxwell's Equations in a Plasma; Plane Electromagnetic Waves; Helicon and Alfvén Waves; The Ionosphere.

TEXTBOOKS

Special Notes.

PHYS309 ADVANCED EXPERIMENTAL PHYSICS

168 hrs laboratory
Assessment: Based on classroom performance and laboratory assignments.

Electronics used in Physics Experiments; Electrical Measurements; Power Supplies, Amplification by Vacuum Tubes and Transistors; Amplifier Circuits; Oscillators; Electronic Switching, Timing and Digital Counting Systems; Microwave Experiments; The Artificial Transmission Line; Measurement of $\frac{e}{m}$ for an Electron; Millikan's Oil Drop Experiment; Analogue Field Plotter; Michelson Interferometer; Attenuation of γ-rays; Positron Annihilation Experiment; Experiments on Solid State Physics; Statistical Analysis of the Counts from a Radioactive Source, using G.M. Counter; Experiment on Vacuum Techniques; Frank-Hertz Experiment; Rutherford-scattering Experiment; Mass Spectrometer.

PHYS311 QUANTUM AND STATISTICAL MECHANICS

112 hrs lectures
Assessment: Same as for PHYS301

This subject consists of two topics with the following content:

QUANTUM MECHANICS (56 hrs lectures)

Operators in Co-ordinate and Momentum Space with Applications; Spherically Symmetrical Potentials; Spherical Harmonics; Angular Momentum Operators; Uncertainty Relations for Angular Momentum Operators; Stern-Gerlach Experiments and their Impact on the Meaning of Measurement; Topics of Significance to Spectroscopy -3-D Symmetric Harmonic Oscillator, Rigid Rotator, Molecular Spectra, Hydrogen Atom, Normal Zeeman Effect, Spin, Spin-Orbit Interaction, Vector Model for Addition of Angular Momentum, Anomalous Zeeman Effect, L-S Coupling, j-j Coupling, Excited States of Helium, Selection Rules, Hyperfine Structure; Periodic Table; Time Independent Perturbation Theory; Stark effect; Matrix Treatment of the Harmonic Oscillator.

PHYS311 QUANTUM AND STATISTICAL MECHANICS (CONT'D)

TEXTBOOK

Matthews, P.T. *Introduction to Quantum Mechanics.* 3rd ed. McGraw-Hill.

STATISTICAL MECHANICS (56 hrs lectures)

Review of Thermodynamics; Concepts of Quantum Statistical Mechanics; Sharply Peaked Distributions; Ensembles; Systems in Thermal Contact-Entropy and Temperature; Systems in Diffusive Contact - The Chemical Potenial; Gibbs and Boltzmann Factors - Partition Functions; Fluctuations; Pressure and Thermodynamic Identity; Boltzmann Definition of Entropy; Identical Particles - Fermion and Boson Distribution Functions; Applications to Electrons in Metals, Blackbody Radiation and Debye Theory of Vibrations in Solids; Bose-Einstein Condensation and Properties of Liquid Helium; Classical Limit of the Quantum Distribution Functions; Monatomic Ideal Gas; Maxwell-Boltzmann Velocity Distribution, Kinetic Theory; Transport Processes.

TEXTBOOK

Kittel, C. *Thermal Physics.* Wiley, 1969.

PHYS312 ADVANCED EXPERIMENTAL PHYSICS WITH ELECTRONICS

42 hrs lectures and 168 hrs laboratory

Same as PHYS309 Advanced Experimental Physics but includes ELEC312 Electronics II offered by the Department of Electrical Engineering in Session I.

PHYS315 QUANTUM AND STATISTICAL MECHANICS WITH ELECTRONICS

154 hrs lectures

Same as PHYS311 Quantum and Statistical Mechanics but includes ELEC312 Electronics II offered by the Department of Electrical Engineering in Session I.

PHYS321 ASTRO-, NUCLEAR AND SOLID STATE PHYSICS

84 hrs lectures
Assessment: Same as for PHYS301

The contents of this subject are as follows:

ASTROPHYSICS (28 hrs lectures)

Determination of Stellar Magnitudes, Spectra, Masses, Radii and Luminosity; Relations between these Quantities; Chemical Composition and Population Type; Radiation Transfer; Spectral Lines and Absorption; Formation of Absorption Lines; Line Profiles and Strengths; The Differential Equations of Stellar Structure; Radiation and Convection; Calculation of Evolutionary Sequences; Protostars; The Main Sequence; Red-Giant Stage; Final Stages of Evolution.

TEXTBOOKS

Swihart, T.L. *Astrophysics and Stellar Astronomy.* Wiley, 1968.
Taylor, R.J. *The Stars: Their Structure and Evolution.* Wykeham, 1970. (Paperback).

NUCLEAR PHYSICS (28 hrs lectures)

Rutherford Scattering; Energy Loss Processes for Heavy Charged Particles, Electrons and Photons; Basic Properties of Nucleii - Radius and Charge Distribution; Angular Momentum; Magnetic Moment; Parity, Quadrupole Moment; Binding Energies; Excited States; Nuclear Models - Fermi Gas, Shell, Liquid Rotator, Liquid Drop; Semi-empirical Mass Formula - Phenomenology, Beta Stability Criteria; Decay Laws; Partial Half-lives; Alpha Decay Theory; Beta Decay Theory - Neutrino Hypothesis; Weak Interaction; Fermi's Golden Rule; Kurie Plots; Classification of Transitions and Selection Rules; Electron Capture; Inverse Beta Decay; Conservation of Parity; Universal Fermi Interaction; Gamma Decay - Vector Model for Addition of Angular Momentum; Electric and Magnetic Multipole Radiation; Internal Conversion; Nuclear Forces - Characteristics, Yukawa Theory.

TEXTBOOK

Meyerhof, Walter E. *Elements of Nuclear Physics.* McGraw, 1967.

PHYS321 ASTRO-, NUCLEAR AND SOLID STATE PHYSICS (CONT'D)

INTRODUCTORY SOLID STATE PHYSICS (28 hrs lectures)

Symmetry Operations; The Lattice; Crystal Systems; Bravais Lattices; Crystal Structure; Miller Induces; The Reciprocal Lattice; The Laue Equations; Bonding; Molecular Spectra; Lattice Vibrations; Monatomic Linear Chain; Einstein's Theory of Specific Heat; The Free Electron Theory of Metals; Electrical Conductivity and Ohm's Law; Hall Effect; Electronic Specific Heat; Fermi-Dirac Statistics; The Band Theory of Solids; Nearly Free Electron Approximation; Extended and Reduced Zones; Metals, Insulators and Semi-Conductors; Tight Binding Approximation; Effective Mass; Bloch's Theorem; The Positive Hole; Semi-Conductors; Intrinsic Conductivity; Electron and Hole Concentrations; Superconductivity.

TEXTBOOK

Kittel, C. *Introduction to Solid State Physics.* 5th ed. Wiley, 1976.

PHYS322 ASTRO-, HIGH ENERGY, NUCLEAR AND SOLID STATE PHYSICS

98 hrs lectures and 14 hrs tutorials
Assessment: Same as for PHYS302

The contents of this subject are as follows:
Astrophysics, Nuclear and Solid State Physics sections of PHYS321

AND

HIGH ENERGY PHYSICS (14 hrs lectures and 14 hrs tutorials)

Particle Accelerators and Detectors; Principles of Focussing; Characteristics of Particles and Resonances; Conservation Laws; Strangeness; Particle Multiplets; The Eightfold Way; Quarks; Colour and Chare; Cosmic Rays.

TEXTBOOK

Whiteside, H. *The Project Physics Course Supplementary Unit A - Elementary Particles.* Holt, 1971.
In addition to the prescribed text, an extensive reading list will be supplied.

PHYS348 ASTRONOMY

42 hrs lectures, 14 hrs tutorials and 28 hrs practical
(Approval for taking Astronomy at the 300-level is at the discretion of the Chairman of the Department of Physics.)
Assessment: Same as PHYS248

Description: See PHYS248

400-LEVEL

The honours degree in physics for a BSc is achieved by the successful completion of a full year of comprehensive study following qualification for a BSc pass degree. Assessment is based entirely on the honours year programme, a programme designed to provide a formal coverage of the core subjects of physics and also involve the student in one or more of the active areas of research in the department.

Entry to the Honours year shall be determined by the Academic Senate on the advice of the Departmental Chairman (who will be advised by the Departmental Assessment Committee). Each student will be assessed individually for each subject. *This assessment will replace the pre- and co-requisite requirements.* The minimum requirements for a student to enrol in the Honours programme is that he/she should have completed a substantial and coherent course at the 300-level in physics and that a significant number of examination results should be better than Pass Level in these 300-level subjects.

PHYS401 THEORETICAL MECHANICS AND ELECTROMAGNETISM

56 hrs lectures
Assessment: Each topic (see below) is assessed separately and is of equal weight. The individual assessments are based on assigned problems, tests and sessional examinations.

The contents of the topics are as follows:

THEORETICAL MECHANICS (28 hrs lectures)

Lagrange Equations with Applications including Generalized Potentials, Dissipation, Holonomic and Integral Constraints; Gauge Transformation of Lagrangian; Conservation Theorems; Hamilton's Principle; Principle of Least Action; Hamilton's Formulation of Mechanics; Canonical Transformation; Hamilton-Jacobi Theory; Poisson Brackets; Canonical Invariants; Liouville's Theorem.

PHYS401 THEORETICAL MECHANICS AND ELECTROMAGNETISM (CONT'D)

TEXTBOOK

Goldstein, H. *Classical Mechanics.* Addison-Wesley.

ELECTROMAGNETISM (28 hrs lectures)

Poisson's and Laplace's Equations; Green's Theorem and Functions; Method of Images; Method of Inversion; Green's Function for Sphere; Boundary Value Problems in Common Coordinate Systems; Eigenfunction Expansions; Multipoles; Dielectrics; Magnetostatics; Time Varying Fields; Plane Electromagnetic Waves in Media with Dielectric Interfaces in Conducting Media Including Plasmas; Wave Guides and Resonant Cavities; Radiating Systems and Diffraction.

TEXTBOOK

Jackson, J.D. *Classical Electrodynamics.* 2nd Ed. Wiley.

PHYS410 HONOURS PROJECT

560 hrs
Assessment: Based on contribution to the project and written and oral presentations of report. (See below).

The student is required to participate actively in an existing research project under the supervision of staff member(s). It is expected that the student will contribute to the successful development and/or productivity of the project. A report on the project is to be compiled by the student and presented to the staff. A preliminary presentation of the content of the report is to be delivered to the department at one of the formal departmental colloquia in the latter part of the academic year. The clarity and completeness of this presentation will form part of the assessment of the subject.

PHYS441 ASTRO- AND NUCLEAR PHYSICS

56 hrs lectures
Assessment: Same as for PHYS401

The contents of the topics are as follows:

ASTROPHYSICS (28 hrs lectures)

Review of Observational Data; Radiative Transfer, Absorption, Emission, Equation of Transfer and its Solution; The Calculation of Absorption Coefficients, Excitation, Ionization, and Absorption Processes; Stellar Atmospheres, Equations, Convective and Radiative Transfer; Models for Given Temperature and Surface Gravity; The Theory of Line Absorption, Line Profiles, Equivalent Widths, the Curve of Growth; Equations for Stellar Interiors; Radiative and Convective Equilibrium; Nuclear Processes; Calculation of Evolutionary Sequences; Stellar Evolution; Protostars, Main Sequence, Red-giant and Final Evolutionary Stages for Various Masses; White Dwarfs, Supernovae and Formation of Elements; Neutron Stars, Gravitational Collapse.

TEXTBOOK

Novotny, E. *Introduction to Stellar Atmospheres and Interiors.* Oxford University Press, 1973.

NUCLEAR PHYSICS (28 hrs lectures)

Nuclear Wave Functions and Potentials; The Deuteron; Exchange Forces (Wigner, Bartlett, Majorana, Heisenberg); Angular Momentum Coupling; Analog States and the Charge Independence of Nuclear Forces; Nuclear Reactions - Compound Nucleus Formation, Resonances, Optical Model, Direct Reactions; Theory of Fission; Fusion Reactors - Magnetic Confinement, Heating, and Instabilities of Plasmas, Implosion Techniques; Elementary Particles.

TEXTBOOK

Freunfelder, H. and Henley, E.M. *Subatomic Physics.* Prentice-Hall Inc., N.J. 1974.

PHYS443 QUANTUM MECHANICS AND STATISTICAL MECHANICS

84 hrs lectures
Assessment: Each topic is assessed separately and weighted in proportion to the number of contact hours (see below). The individual assessments are based on assigned problems, tests and sessional examinations.

The contents of the topics are as follows:

PHYS443 QUANTUM MECHANICS AND STATISTICAL MECHANICS (CONT'D)

QUANTUM MECHANICS (Double session topic; 56 hrs lectures)

Relationship between Operators, Basis Sets and Matrices; Change of Basis Sets; Commutator Algebra, Raising and lowering Operators, Exponentiated Operators; Commutation Rules for Angular Momentum Operators; Orbital Angular Momentum; Application to Various Spherically Symmetric Potentials; Scattering Theory, Born Approximation, Partial Waves and Phase Shifts; Time Independent Degenerate and Non-degenerate Perturbation Theory; Time Dependent Perturbation Theory, Fermi's Golden Rule, Photo-emission, Multipole Transitions, Spontaneous Emission, Einstein Transition Probabilities; Schrodinger, Heisenberg and Interaction Pictures; Variational Methods, Identical Particles, Hartree and Hartree-Fock Theory, Koopman's Theorem; Addition of Angular Momentum, Clebsch-Gordon Coefficient, Spin-Orbit Interaction.

TEXTBOOKS

Powell, J. & Craseman, B. *Quantum Mechanics.* Addison-Wesley.
Bethe, H. *Intermediate Quantum Mechanics.* Benjamin.

STATISTICAL MECHANICS (Second session topic; 28 hrs lectures)

Boltzmann Transport Equation with Applications to Transport Properties; Boltzmann's H Theorem; Liouville's Theorem and its Application to Classical Statistical Mechanics; Conservation Laws; The Classical Ensembles with Applications; The Generalised Equipartion Theorem; Density Fluctuations and Phase Transitions; Imperfect Gases; The Density Matrix; Quantum Ensembles; Classical Limit of the partition Function; Further applications of Quantum Distribution Functions to Systems of Interest in Modern Physics.

TEXTBOOK

Huang, K. *Statistical Mechanics.* Wiley.

PHYS446 SOLID STATE PHYSICS

56 hrs lectures
Assessment: Based on homework assignments, tests and a final examination.

Crystallography; Diffraction of Waves by Crystals; Crystal Binding; Elasticity; Normal Modes; Lattice Vibrations; Lattice Specific Heat; Free Electron Theory of Solids; Electronic Specific Heat; Electrical Conductivity; Hall Effects; Cyclotron Resonance; Band Theory of Solids; Bloch's Theorem; Nearly Free Electron Approximation; Tight Binding Approximation; Properties of Bloch Functions; Metals; Effective Mass; The Hole; Semiconductors, Intrinsic and Extrinsic; Superconductivity.

TEXTBOOK

Kittel, C. *Introduction to Solid State Physics.* 5th ed. Wiley, 1976.

PHYS455 NUCLEAR AND SOLID STATE PHYSICS

84 hrs lectures
Assessment: Same as for PHYS443

The contents of the two topics are:

Nuclear Physics section of PHYS441
Solid State Physics, PHYS446

PHYS465 ASTRO- AND SOLID STATE PHYSICS

84 hrs lectures
Assessment: Same as for PHYS443

The contents of the two topics are:

Astrophysics section of PHYS441
Solid State Physics, PHYS446

PSYCHOLOGY

SCHEDULE ENTRIES

Refer to Schedule A for approved details of the subjects described in this section. Subjects which also appear in other schedules are:

Subject	*Schedules*
PSYC101	E-2
PSYC102	E-2
PSYC316	E-1
PSYC322	E-1
PSYC336	E-1
PSYC342	E-2
PSYC343	E-2
PSYC346	E-2
PSYC348	E-2

100-LEVEL

PSYC101 PSYCHOLOGY IA

6 contact hrs: 4 lectures; 2 prac/demonstrations
Chairpersons for the subject: Professor A.M. Clarke & Dr. N.L. Adams
Assessment: Within session assignments consisting of reports on laboratory work and statistics, one essay, and two end-of-session examinations

The subject will consist of four areas of study: research methods and statistical techniques (first part); psychobiology; development and social processes; and motivation and emotion (first part).

TEXTBOOKS

Hilgard, E.R., Atkinson, R.C. & Atkinson, R.L. *Introduction to Psychology.* 6th ed. Harcourt, Brace, Jovanovich, Inc., New York, 1975.
Hilgard, E.R., Atkinson, R.C. & Atkinson, R.L. *Study guide for Introduction to Psychology.* 6th ed. Harcourt, Brace, Jovanovich, Inc., New York, 1975.
MacDonald, T.H. *Statistics: Their Application to Human Activities.* Pitman Publishing Pty. Ltd., Carlton, Victoria, 1977.

PSYC102 PSYCHOLOGY IB

6 contact hrs: 4 lectures; 2 prac/demonstrations
Chairpersons for the subject: Professor A.M. Clarke & Dr. N.L. Adams
Assessment: Within session assignments consisting of reports on laboratory work and statistics, one essay, and two end-of-session examinations

The four areas of study in this subject are: research methods and statistical techniques (second part); motivation and emotion (second part); learning and cognition; abnormal psychology and individual differences.

TEXTBOOKS

Hilgard, E.R., Atkinson, R.C. & Atkinson, R.L. *Introduction to Psychology.* 6th ed. Harcourt, Brace, Jovanovich, Inc., New York, 1975.
Hilgard, E.R., Atkinson, R.C. & Atkinson, R.L. *Study guide for Introduction to Psychology.* 6th ed. Harcourt, Brace, Jovanovich, Inc., New York, 1975.
MacDonald, T.H. *Statistics: Their Application to Human Activities.* Pitman Publishing Pty. Ltd., Carlton, Victoria, 1977.

200-LEVEL

PSYC231 PERSONALITY

4 contact hrs: 2 lectures; 2 seminar/lab
Chairperson for the subject: Dr. B.M. Walker
Assessment: Examination, essay, laboratory reports, seminar papers

PSYC231 PERSONALITY (CONT'D)

This subject comprises two closely related strands. The lecture course introduces the major theories of personality. Detailed critical analysis and comparison will be made of the principal paradigms - the psychoanalytic, behaviourist, and existential - as well as theories that have evolved from them such as ego-psychology, social learning theory and self theory. Consideration will also be given to more empirically based theorists. The laboratory work will include class exercises and research projects based on work covered in the theoretical strand.

TEXTBOOK

Hogan, R. *Personality theory: The personological tradition.* Prentice-Hall, N.Y., 1976.

REFERENCE BOOK

Hall, C.S. & Lindzey, G. *Theories of personality.* Wiley, N.Y., 1970.
Lindzey, G., Hall, C.S. & Manosevitz, M. *Theories of personality: Primary sources and research.* Wiley, N.Y., 1973.

PSYC232 RESEARCH METHODS AND STATISTICS

4 contact hrs: 2 lectures; 2 tutorials
Chairperson for the subject: Dr. S. Ginsberg
Assessment: Assignments, midterm exam, and final exam

A general introduction to research methodology and related statistical techniques and their application to selected problems in psychology. The research-methods lectures progress from general ideas about research, scientific method, and experimental inference to special problems of psychology as a science, formulation of a research problem, choice of a method or design, interpretation and explanation of data, significance and generality of the findings, and communication to the public.

The main aspects of statistical analysis covered are: probability theory; regression and prediction; normal and binomial distributions; statistical inference with two independent samples; statistical inference with correlated samples; one-way analysis of variance; power of a test and types of errors; nonparametric tests with categorical and ordinally scaled variables (binomial test, chi-squared, Mann-Whitney U-test, Wilcoxon test).

TEXTBOOKS

Runkel, P.J. & McGrath, J.E. *Research on human behaviour: A systematic guide to method.* Holt, Rinehart & Winston, New York, 1972.
Runyon, R.P. & Haber, A. *Fundamentals of behavioural statistics.* 2nd or 3rd ed. Addison-Wesley, Reading, Mass., 1971 or 1976.
Runyon, R.P. & Haber, A. *Workbook to accompany fundamentals of behavioural statistics.* Addison-Wesley, Reading, Mass., 1975.

PSYC233 DEVELOPMENT

4 contact hrs: 2 lectures; 2 seminar/pracs
Chairperson for the subject: Dr. B.M. Walker
Assessment: Seminar papers, reports and examination

This subject considers development throughout the life span and includes appropriate theories and empirical work. Emphasis will be placed on both the social and societal contexts in which development occurs and on the extent to which the theories discussed are culturally bound.

Topics will include: Maternal deprivation; the relevance of the nuclear family to development; cognitive theories and research; personality development; influences of and changes in social interaction. Students may specialise in child development, in adolescence or in ageing, and should purchase the text appropriate to their choice. Students are cautioned that much of the material dealt with in this course relies on a knowledge of material presented in PSYC231.

TEXTBOOKS

To be announced.

PSYC234 PSYCHOLOGY OF LEARNING

4 contact hrs: 2 lectures; 2 lab
Chairperson for the subject: Dr. S. Ginsberg
Assessment: Laboratory reports and examinations

PSYC234 PSYCHOLOGY OF LEARNING (CONT'D)

Lecture topics will include: fundamental principles of Pavlovian and instrumental conditioning; basic reinforcement principles, learning theories, extinction, patterns of reinforcement, emotion and motivation, generalization, discrimination, concept identification, verbal learning, memory, and language learning. The laboratories will be devoted to exercises and projects based on the work covered in the lectures.

TEXTBOOK

Hulse, S.H., Deese, J. & Egeth, H. *The psychology of learning.* 4th ed. McGraw-Hill, New York, 1975.

PSYC235 PSYCHOLOGICAL ASSESSMENT

4 contact hrs: 2 lectures; 1 lab; 1 seminar
Chairperson for the subject: Dr. J.L. Morris
Assessment: Examination, test construction, test administration, assignment

Topics include: (a) test classification, test administration, interpretation of scores, dissemination of test results; (b) test theory which includes a consideration of reliability, validity, test construction, item analysis, factor analytic construction of tests, personnel selection; (c) types of tests and special uses - education, clinical work-management; (d) non-test techniques of assessment; (e) problems and limitations of testing; (f) practical work which includes the construction of tests and the taking and administration of individual and group tests.

TEXTBOOK

Cronbach, L.J. *Essentials of psychological testing.* 3rd ed. Harper & Row, N.Y., 1970.

PSYC236 APPLIED PSYCHOLOGY

3 contact hrs: 2 lectures; 1 seminar/tutorial
Chairperson for the subject: Dr. N.L. Adams
Assessment: Seminar papers; essay and/or examination

This subject introduces the student to applied aspects of several of the areas of psychology which are dealt with at a more advanced standard in individual 300 level subjects. The subject will explore: ways in which psychologists suggest that behaviour may be modified; and the various uses made of psychology in counselling; in vocational guidance and selection; in humanistic endeavours; in job design and industrial relations; and in social psychology.

TEXTBOOKS

Bender, M.P. *Community psychology.* Methuen, London, 1975.
Berrien, F.K. *Industrial psychology.* Wm.C. Brown, Dubuque, Iowa, 1967.
Blumberg, A. & Golembiewski, R.T. *Learning and change in groups.* Penguin, Middlesex, 1976.
Gahagan, J. *Interpersonal and group behaviour.* Methuen (Essential Psychology series), London, 1975.
Reese, E.P. *The analysis of human operant behaviour.* Wm.C. Brown, Dubuque, Iowa, 1966.
(Note: all of the above texts are in soft cover and should be less than $3.00 each.)

300-LEVEL

MATH334 DESIGN AND ANALYSIS

Refer to "Description of Subjects - Mathematics."

PSYC338 BEHAVIOUR MODIFICATION

4 contact hrs: 2 lectures; 2 laboratory
Chairperson for the subject: Professor A.M. Clarke
Assessment: Within session assignments and end of session examination

Concepts, criteria and strategies of behavioural self-control. Methodological issues in self-control and self-observation. Self-regard, self-punishment and aversive self-regulation.

Self-control of physiological responding by means of instrumental learning and/or biofeedback. Psycho-physiological concomitants of central states and their relation to learning, motivation and attention.

PSYC338 BEHAVIOUR MODIFICATION (CONT'D)

TEXTBOOKS

Schwitzgebel, R.K. & Kolb, D.A. *Changing human behavior: Principles of planned intervention.* McGraw-Hill, New York, 1974.
Thoresen, C.E. & Mahoney, M.J. *Behavioral self-control.* Holt, Rinehart & Winston, Sydney, 1974.

RECOMMENDED READING

Venables, P.H. & Martin, I., eds. *A manual of psychophysiological methods.* Wiley, N.Y., 1967.

PSYC348 BEHAVIOUR MODIFICATION (SCIENCE)

6 contact hrs: 2 lectures; 2 labs; 2 hrs supervised project
Chairperson for the subject: Professor A.M. Clarke
Other details: Same as PSYC338

PSYC335 HUMANISTIC PSYCHOLOGY

5 contact hrs: 1 lecture; 2 seminars; 2 practical
Chairperson for the subject: Dr. D.D. Diespecker
Assessment: Two oral examinations (mid-session and end-of-session) and one essay

The course is designed to study the emerging field of humanistic psychology. Lectures and seminars will examine such topics as the development of human potential (acceptance of responsibility, feelings, change and growth), the holistic doctrine, group dynamics and interactions, evaluation of personality change, humanistic and existential approaches to psychotherapy, and theoretical contributions from humanistic psychology. A two-hours workshop, "The Educational Community", will allow students to participate in experiential sessions. Practical work will include exercises in body awareness, guided fantasy, T'ai Chi Chuan, Gestalt techniques, and the microlab approach to learning. Attendance at the practical sessions is not compulsory and no assessment will be made of these.

PRELIMINARY READING

Bühler, Charlotte and Allen, Melanie. *Introduction to humanistic psychology.* Brooks/Cole, Monterey, Calif., 1972.
Jourard, S.M. *Healthy personality: An approach from the viewpoint of humanistic psychology.* Collier-Macmillan, New York, 1976.

TEXTBOOKS

Goble, F.G. *The third force. The psychology of Abraham Maslow.* Pocket Books, New York, 1971.
May, R. ed. *Existential psychology.* 2nd ed. Random House, New York, 1969.
Perls, F.S. *Gestalt therapy verbatim.* Bantam, New York, 1971.
Perls, F.S. *The Gestalt approach and eyewitness to therapy.* Bantam, New York, 1973.
Polster, E. & Polster, Miriam. *Gestalt therapy integrated. Contours of theory and practice.* Vintage, New York, 1974.
Rogers, C.R. *On becoming a person.* Constable, London, 1961.
Schutz, W.C. *Here comes everybody.* Harrow, New York, 1971.

RECOMMENDED READING

Assagioli, R. *Psychosynthesis.* Viking, New York, 1971.
Blumberg, A. & Golembiewski, R.T. *Learning and change in groups.* Penguin, Harmondsworth, Middx., 1976.
Feldenkrais, M. *Awareness through movement.* Harper and Row, New York, 1972.
Friedman, M. *The hidden human image.* Delta, New York, 1974.
Laing, R.D. *The politics of experience and the bird of paradise.* Penguin, Harmondsworth, Middx., 1967.
Rogers, C.R. *Encounter groups.* Penguin, Harmondsworth, Middx., 1970.

PSYC336 EXPERIMENTAL PSYCHOLOGY

4 contact hrs: 2 lectures; 2 seminars/lab
Chairperson for the subject: Dr. S. Ginsberg
Assessment: Seminar and/or laboratory reports: final examination

A detailed study of specific methods of investigation employed in selected content areas of psychology, e.g., sensation, perception, learning.

TEXTBOOK

Lawson, R.B., Goldstein, S.G. & Musty, R.E., *Principles and methods of psychology.* Oxford University Press, New York, 1975.

PSYC346 EXPERIMENTAL PSYCHOLOGY (SCIENCE)

6 contact hrs: 2 lectures; 2 laboratory/seminars; 2 hrs supervised project
Chairperson for the subject: Dr. S. Ginsberg
Other details: Same as PSYC336

PSYC312 COUNSELLING PSYCHOLOGY

5 contact hrs: 2 lectures; 2 prac/field; 1 seminar
Chairperson for the subject: Dr. J.L. Morris
Assessment: Examination, assessment assignment

Topics will include the social context of counselling; counselling and psychotherapy; application of personality theory to practice; establishment of an effective relationship; interview techniques; assessment and testing; diagnosis; special areas of interest including transactional analysis and behaviour modification.

Note:

(a) This subject is a pre-requisite for PSYC339 Counselling Psychology (Practicum) which should be offered in the first session 1979.
(b) PSYC312 Counselling Psychology is to be offered in alternate years with PSYC339 Counselling Psychology (Practicum), e.g. PSYC312 is to be offered in 1978 but not in 1979, and PSYC339 is to be offered for the first time in 1979 but not in 1980.

TEXTBOOK

Farwell, G.F., Gamsky, N.R. & Mathieu-Coughlan, P. *The Counsellor's handbook.* Intext Educational Publishers, N.Y., 1974.

RECOMMENDED READING

Bernard, H.W. & Fullmer, D.W. *Principles of guidance.* Crowell Co., N.Y., 1977.

PSYC315 PSYCHOLOGY OF ABNORMALITY

3 contact hrs: 1 lecture; 2 seminars
Chairperson for the subject: Dr. D.D. Diespecker
Assessment: Examination and seminar papers

The subject is designed to explore contrasting notions regarding the onset of mental disturbances or disorders. Biological, psychoanalytic, humanistic, behavioristic, and other systems will be considered. Topics to be discussed include normality, stress, sociocultural factors, transient situational disturbances, personality disorders, the neuroses, the psychoses, psychophysiologic disorders, brain disorders, mental retardation, diagnosis and treatment.

PRELIMINARY READING

Magaro, P.A. ed. *The construction of madness. Emerging conceptions and intervention into the psychotic process.* Pergamon, Oxford, 1976.

TEXTBOOK

Kisker, G.W. *The disorganized personality.* 2nd ed. McGraw-Hill, New York, 1972.

RECOMMENDED READING

Maher, B. *Principles of psychopathology.* McGraw-Hill, N.Y., 1970.
Mannoni, O. *The antipsychiatric movements* in *International Journal of Social Science.* 1973, 25, 89-503.
Szasz, T. *The myth of mental illness* in *American Psychologist.* 1960, 15, 113-118.

PSYC316 INDIVIDUAL DIFFERENCES

4 contact hrs: 2 lectures; 2 seminars
Chairperson for the subject: Dr. B.M. Walker
Assessment: Seminar papers and examinations

Psychology will be considered not from the standpoint of general laws, but from the view of individual variation.

It is intended to consider the nature, assessment, structure, growth and decline of individual differences in:

(i) ability;
(ii) personality (including motivation).

PSYC316 INDIVIDUAL DIFFERENCES (CONT'D)

In addition it is intended to explore current trends in some more specialized aspects of the above, e.g. cognitive styles, creativity, racial differences, sex differences, cross-cultural differences.

TEXTBOOK

Tyler, L.E. *Individual Differences.* Appleton-Century-Crofts, N.Y., 1974.

REFERENCE BOOKS

Butcher, H.J. *Human Intelligence.* Methuen, London, 1968.
Butcher, H.J. & Lomax, D.E. *Readings in Human Intelligence.* Methuen, London, 1972.
Maccoby, E. & Jacklin, C. *The Psychology of Sex Differences.* Stanford University Press, Stanford, 1975.
Tyler, L. *The Psychology of Human Differences.* Appleton-Century-Crofts, N.Y. 1965.

PSYC323 INDUSTRIAL AND ORGANIZATIONAL PSYCHOLOGY

4 contact hrs: 3 hrs lecture/tutorial; 2 hrs seminar bi-weekly; 3 half-day industrial visits
Chairperson for the subject: Dr. N.L. Adams
Assessment: Seminar papers and examination or research paper

Through the use of experiential group sessions, visits to industrial organisations and lectures by visiting management and union representatives as well as seminars, this subject aims to explore the relationships between psychological theory and human behaviour in the work place. Particular topics of study will be selected from: job design; job satisfaction; worker participation and autonomous work groups; communication within organisations; group dynamics in the organization; competition and co-operation; problems in industrial relations; leadership at shop floor and board room levels.

PRELIMINARY READING

Sutermeister, R.A. *People and productivity.* 3rd ed. McGraw-Hill, N.Y., 1976.

TEXTBOOKS

To be announced.

PSYC343 INDUSTRIAL AND ORGANIZATIONAL PSYCHOLOGY (SCIENCE)

6 contact hrs: 3 hrs lecture/tutorial; 2 hrs seminar bi-weekly; 2 hrs supervised research; 3 half-day industrial visits
Chairperson for the subject: Dr. N.L. Adams
Other details: Same as for PSYC323

PSYC322 SOCIAL PSYCHOLOGY

4 contact hrs: 3 hrs lecture/tutorial; 2 hrs seminar bi-weekly
Chairperson for the subject: Dr. N.L. Adams
Assessment: Seminar papers and examination *or* research paper

Topics will include research methods in social psychology; laboratory and natural settings studies; questionnaire design and attitude measurement; the phenomenological approach in social psychology; interaction in small groups; roles; interpersonal attraction; processes of social influence; the learning of attitudes and values; group conflict; and violence.

Further topics will be selected from among the following: Obedience; authoritarianism and ethnocentrism; political socialization; co-operation and competition; non-verbal communication, proxemics and kinesics; knowing and evaluating persons; and helping behaviour.

TEXTBOOKS

Gergen, K. *Social psychology: Explorations in understanding.* C.R.M., Del Mar, 1973.
Wrightsman, L.S. & Brigham, J.C. *Contemporary issues in social psychology.* 2nd ed. Brooks Cole, Monterey, 1973.

RECOMMENDED READING

Blass, T. *Contemporary social psychology: Representative readings.* Peacock, Itasca, 1967.
Hamsher, J.H. & Sizall, H. *Psychology and social issues.* Macmillan, N.Y., 1973.
Shaw, M.E. & Costanzo, P.R. *Theories of social psychology.* McGraw-Hill, N.Y., 1970.
Wertheiner, M. *Confrontation.* Scott Foresman, Glenview, 1970.

PSYC339 COUNSELLING PSYCHOLOGY (PRACTICUM)*

4 contact hrs: 1 lecture; 2 seminar/case handling; 1 tutorial
Chairperson for the subject: Dr. J.L. Morris
Assessment: (a) written case study report; (b) supervisor's assessment of case handling

This subject is intended as a follow on to PSYC312 Counselling Psychology. It provides an opportunity to employ theory and techniques developed in PSYC312.

Students are required to interview clients and prepare case study reports. The usual arrangements for interviewing are:

(a) at the Department of Psychology;
(b) at approved community agencies in which counselling services are provided.

However, other arrangements may be made where special facilities and experiences are available.

PRELIMINARY READING

Tyler, Leona. *The work of the counsellor.* Appleton-Century-Crofts, N.Y., 1969.

TEXTBOOKS

Gilmore, S.K. *The counsellor in training.* Appleton-Century-Crofts, N.Y., 1973.

RECOMMENDED READING

Morris, R.J. *Perspectives in abnormal behaviour.* Pergamon, N.Y., 1974.

400-LEVEL

See pre-requisite column and note in Schedule A concerning entry into the Honours year.

PSYC431 PSYCHOLOGY IV HONOURS - THEORETICAL ESSAY

Chairpersons for the subject: Professor A.M. Clarke and Dr. D.D. Diespecker

A supervised essay of between 6,000 and 8,000 words about a theoretical issue in psychology.

PSYC432 PSYCHOLOGY IV HONOURS - COURSEWORK

2 contact hrs: 2 hrs lectures; 2 hrs seminars - alternate weeks
Chairpersons for the subject: Professor A.M. Clarke and Dr. D.D. Diespecker
Assessment: Class participation, seminar presentation, essay and/or examination

A series of seminars and lectures on important psychological issues.

RECOMMENDED READING

Lists of recommended reading books will be given throughout the course.

PSYC433 PSYCHOLOGY IV HONOURS - EMPIRICAL THESIS

Chairpersons for the subject: Professor A.M. Clarke and Dr. D.D. Diespecker

A supervised empirical research project of between 12,000 and 15,000 words. Students will attend a seminar in which they discuss their own research and provide constructive criticism of other students' research projects.

*To be offered in 1979. Refer to note accompanying PSYC312 Counselling Psychology description.

SOCIOLOGY

Introductory Notes

1. All seminars in Sociology at 100,200,300 and 400 levels are 2 hours long, except for the SOC100 'Open Seminar', which is a 3 hour class.
2. Students should consult with the Department of Sociology before purchasing textbooks for any of the courses offered in 1978.

SCHEDULE ENTRIES

Refer to Schedule A for approved details of the subjects described in this section.

100-LEVEL

SOC100 SOCIOLOGY I

Lecture per week - 1; Seminar per week - 1; Open Seminar - 1
Assessment: A process of continuous assessment, which will include 2 theory essays, 1 research essay, 4 seminar assignments

Sociology I is intended as an introduction to the basis of sociological theory, to the nature of sociological understanding and 'knowledge', to the application of sociology to current social issues. Students will be expected, through the subject, to develop a sociological analytic way of thinking about social issues. Early focus of the course is on the individual in society and construction of social meaning; from this basis, coursework expands into examination of wider society and wider issues of sociological enquiry and debate.

Teaching will be conducted in a one hour lecture, two hour seminar and an 'open' seminar each week. Within this perspective, the subject will move through the following topics:

First Session

THE INDIVIDUAL IN SOCIETY

A. Nature of sociology, sociological perspective, explanation, theory.
B. The individual in society - roles, freedom vs. conformity; Socialisation, the family, school, mass media, small groups, reference groups, adult socialisation; Social control and conformity, deviance.
C. Consciousness and culture, knowledge and epistemology.

Second Session

A. SOCIETY AS A 'WHOLE'
The modern shape of work, industrial context of work, capitalism, rationality, features of human relationships in a modern work context.

Bureaucracy, alienation and features of Modern Society. Mass Society, economic and political relationships, consumer society. Science, technology and modern society.

B. SOCIETY AS DIFFERENTIATED
Power; class. Minority groups, counter culture. Classic organising theories of society, ways of viewing experience and implications for method.

C. BELIEF SYSTEMS, RELIGION AND IDEOLOGY

D. THE SOCIOLOGIST IN SOCIETY, BASES OF SOCIOLOGICAL METHOD

TEXTBOOKS

Berger, P.L. *Invitation to Sociology.* Pelican, G.B., 1971.
Chinoy, E. & Hewitt, John P. *Sociological Perspective.* 3rd ed. Random House, N.Y., 1975.
D'Alton, S. & Bittman, M. *The Social Experience.* Nelson, Aust., 1973.
Glazer, M. *The Research Adventure.* Random House, N.Y., 1972.
Henry, J. *Culture Against Man.* Tavistock, London, 1966.

200-LEVEL

SOC202 SOCIOLOGY IIA: CENTRAL THEMES IN SOCIOLOGY

This subject is in two parts: (1) Sociological Theory *(lecture per week - 1; seminar per week - 1)* and (2) Sociological Method I *(lecture per week - 1; seminar per fortnight - 1)*
Assessment: (1) Essays - 1; Seminar papers - 2; (2) Research project - 1; Seminar papers - 1

(1) SOCIOLOGICAL THEORY
The aim of this unit is to use the study of particular social institutions as a framework for the examination of the basic sociological themes of cohesion, conflict and social change.

SOC202 SOCIOLOGY IIA: CENTRAL THEMES IN SOCIOLOGY (CONT'D)

TEXTBOOKS

Cohen, Percy, S. *Modern Social Theory.* Heinemann Books, London, 1975.
Thompson, Kenneth and Turnstall, Jeremy, eds. *Sociological Perspectives.* Penguin Books, Harmondsworth, 1976.

(2) SOCIOLOGICAL METHOD I
This unit is designed to introduce the student to some of the basic principles and concepts of social research. Following an introduction to some of the epistemological questions raised by social science methodology, the course goes on to emphasise concrete operations in research, including an introduction to the use of basic statistics.

Students will be required to design field research and validate this design as a major component of this unit.

TEXTBOOKS

Goode, S. & Hatte, P. *Methods in Social Research.* McGraw-Hill, New York, 1952.
Madge, J. *The Tools of Social Science.* Longmans Green and Co., London, 1967.

SOC213 BELIEF SYSTEMS, IDEOLOGIES A

This subject is in two parts: (1) Belief Systems, Ideologies *(seminar per week - 1; lecture per week - 1)* and (2) Sociological Method II *(seminar per fortnight - 1; lecture per fortnight - 1)*
Assessment: (1) Essays - 1; Seminar papers - 2; (2) Research project - 1

(1) BELIEF SYSTEMS, IDEOLOGIES
This section will cover a number of different perspectives or views. Systems of thought and action which involve different ways of viewing the world, and thus provide a broader base for examining our own culture.

TEXTBOOKS

Castaneda, C. *Journey to Ixtland: The Lessons of Don Juan.* Bodley Head, New York, 1973.
Castaneda, C. *Tales of Power.* Hodder and Stoughton, New York, 1975.
Watts, A.W. *The Way of Zen.* Penguin, Harmondsworth, 1974.

(2) SOCIOLOGICAL METHOD II
This section, as an extension of Sociological Method I, will include "works in progress" seminars aimed at developing individual student's competence, via the medium of individual research projects.

TEXTBOOKS

Moroney, M.J. *Facts from Figures.* Penguin, London, 1973.
Moser, C.A. & Kalton, G. *Survey Methods in Social Investigation.* 2nd ed. Heinemann Educational Books Ltd., London, 1971.

SOC214 SOCIAL STRATIFICATION A

This subject is in two parts: (1) Social Stratification *(seminar per week - 1; lecture per week - 1)* and (2) Sociological Method II *(seminar per fortnight - 1; lecture per fortnight - 1)*
Assessment: (1) Essays - 1; Seminar papers - 2; (2) Research project - 1

(1) SOCIAL STRATIFICATION
This section provides a basic introduction to the sociology of stratification including research on income and prestige, mobility and lifestyle. It then outlines a phenomenological position from which students can develop on critique of this conventional approach. In the seminars students can try their hand at re-writing some of the classic statements on stratification.

TEXTBOOKS

One of the following:
Bendix, R. & Lipset, S. eds. *Class, Status and Power.* Free Press, Glencoe, Ill., 1966.
Thompson, K. & Turnstall, J. *Sociological Perspectives.* Penguin, Harmondsworth, 1976.
Beteille, A. *Social Inequality.* Penguin, Harmondsworth, 1976.

RECOMMENDED READING

Becker, H. *The Outsider.* Free Press, N.Y., 1963.
Berger, P. & Luckmann, T. *The Social Construction of Reality.* Penguin, Harmondsworth, 1971.
Greer, G. *The Female Eunuch.* Paladin, London, 1971.
Lenski, G. *Power and Privilege.* McGraw-Hill, New York, 1966.
Marcuse, H. *One Dimensional Man.* Abacus, London, 1972.

SOC214 SOCIAL STRATIFICATION A (CONT'D)

(2) SOCIOLOGICAL METHOD II
This section, as an extension of Sociological Method I, will include "works in progress" seminars aimed at developing individual student's competence, via the medium of individual research projects.

TEXTBOOKS

Moroney, M.J. *Facts from Figures.* Penguin, London, 1973.
Moser, C.A. & Kalton, G. *Survey Methods in Social Investigation.* 2nd ed. Heinemann Educational Books Ltd., London, 1971.

SOC215 TIME, WORK AND LEISURE A

This subject is in two parts: (1) Time, Work and Leisure *(lecture per week - 1; seminar per week - 1)* and (2) Sociological Method II *(seminar per fortnight - 1; lecture per fortnight - 1)*
Assessment: (1) Essays - 1; Seminar papers - 2; (2) Research project - 1

(1) TIME, WORK AND LEISURE
This section examines the relationship between time, work and leisure in modern industrial society. The section emphasises the changing status of work as a value from pre-industrial through to post-industrial society.

TEXTBOOKS

Burns, T. ed. *Industrial Man.* Penguin Books, London, 1969.
Dubin, R. *The World of Work.* Prentice-Hall, Englewood Cliffs, N.J., 1958.
Faunce, W.A. ed. *Readings in Industrial Sociology.* Appleton-Century-Crofts, N.Y., 1967.

(2) SOCIOLOGICAL METHOD II
This section, as an extension of Sociological Method I, will include "works in progress" seminars aimed at developing individual student's competence, via the medium of individual research projects.

TEXTBOOKS

Moroney, M.J. *Facts from Figures.* Penguin, London, 1973.
Moser, C.A. & Kalton, G. *Survey Methods in Social Investigation.* 2nd ed. Heinemann Educational Books Ltd., London, 1971.

SOC217 BELIEF SYSTEMS, IDEOLOGIES B

Seminars per week - 1; Lectures per week - 1
Assessment: Essays - 1; Seminar papers - 2

The subject will cover a number of different perspectives or views. Systems of thought and action which involve different ways of viewing the world, and thus provide a broader base for examining our own culture.

TEXTBOOKS

Castaneda, C. *Journey to Ixtland: The Lessons of Don Juan.* Bodley Head, New York, 1973.
Castaneda, C. *Tales of Power.* Hodder and Stoughton, New York, 1975.
Watts, A.W. *The Way of Zen.* Penguin, Harmondsworth, 1974.

SOC218 SOCIAL STRATIFICATION B

Seminars per week - 1; Lectures per week - 1
Assessment: Essays - 1; Seminar papers - 2

The subject provides a basic introduction to the sociology of stratification including research on income and prestige, mobility and lifestyle. It then outlines a phenomenological position from which students can develop on critique of this conventional approach. In the seminars students can try their hand at re-writing some of the classic statements on stratification.

TEXTBOOKS

One of the following:
Bendix, R. & Lipset, S. eds. *Class, Status and Power.* Free Press, Glencoe, Ill., 1966.
Thompson, K. & Turnstall, J. *Sociological Perspectives.* Penguin, Harmondsworth, 1976.
Beteille, A. *Social Inequality.* Penguin, Harmondsworth, 1976.

SOC218 SOCIAL STRATIFICATION B (CONT'D)

RECOMMENDED READING

Becker, H. *The Outsider.* Free Press, N.Y., 1963.
Berger, P. & Luckmann, T. *The Social Construction of Reality.* Penguin, Harmondsworth, 1971.
Greer, G. *The Female Eunuch.* Paladin, London, 1971.
Lenski, G. *Power and Privilege.* McGraw-Hill, New York, 1966.
Marcuse, H. *One Dimensional Man.* Abacus, London, 1972.

SOC219 TIME, WORK AND LEISURE B

Lectures per week - 1; Seminars per week - 1
Assessment: Essays - 1; Seminar papers - 2

This subject examines the relationship between time, work and leisure in modern industrial society. The subject emphasises the changing status of work as a value from pre-industrial through to post-industrial society.

TEXTBOOKS

Burns, T. ed. *Industrial Man.* Penguin Books, London, 1969.
Dubin, R. *The World of Work.* Prentice-Hall, Englewood Cliffs, N.J., 1958.
Faunce, W.A. ed. *Readings in Industrial Sociology.* Appleton-Century-Crofts, N.Y., 1967.

SOC222 SOCIOLOGY II ADVANCED: FOUNDATIONS OF SOCIOLOGICAL THOUGHT

One 2 hr seminar per week
Assessment: Essays - 1; Seminar assignments - 1

This subject will explore the central sociological concerns of Karl Marx and relate these to the writings of Max Weber and Emile Durkheim. The contribution of Marx to mainstream sociological theory and to forms of contemporary society will be examined from this base.

TEXTBOOKS

Bottomore, T.B. & Rubel, M. *Karl Marx: Selected Writings in Sociology and Social Philosophy.* Penguin, 1974.
Giddens, A. *Capitalism and Modern Social Theory - An Analysis of the Writings of Marx, Durkheim and Max Weber.* Cambridge University Press, London, 1971.

SOC223 SOCIOLOGY II ADVANCED: CONTEMPORARY EUROPEAN SOCIOLOGY

Seminars per week - 1
Assessment: Essays - 1; Seminar assignments - 1

This subject will look at recent trends in sociological theory arising largely from the resurgence of interest in Marx during the mid 1960's. Specifically, it will focus on the substantive concerns and implicit methodologies of Marcuse, Habermas, Sartre, Berger and Luckmann, Lefebvre, Levi-Strauss, Althusser and Gurvitch.

RECOMMENDED READING

Selected works by the abovementioned authors. Titles to be distributed at commencement of course. In addition, the following general works:

Desan, W. *The Marxism of Jean-Paul Sartre.* Peter Smith, Gloucester, Mass., 1974.
Lichtheim, G. *From Marx to Hegel.* Orbach and Chambers, London, 1971.
Radnitsky, G. *Continental Schools of Metascience.* Akademiforlaget, Goteborg, Sweden, 1968.

300-LEVEL

SOC301 CONTEMPORARY CULTURE A

Seminars per week - 1
Assessment: Essays - 1; Seminar papers - 2

This subject is centred around an investigation of communication in modern society. Communication tends to be a residual topic, but its operation and aims are not clearly understood. Detailed examination will focus upon the mass media, pop music and science fiction.

SOC301 CONTEMPORARY CULTURE A (CONT'D)

TEXTBOOKS

A detailed list of the various sources to be consulted by students will be supplied at the beginning of the course.

SOC302 RELIGION AND SOCIETY

Seminars per week - 1
Assessment: Essays - 1; Seminar papers - 2

An historical and cross-cultural examination of the relationahip between religion and other social institutions. Particular emphasis will be placed on the conflicting roles of religion as an integrative (conservative) and devisive (revolutionary) force in society.

TEXTBOOKS

Robertson, R. *The Sociological Interpretation of Religion.* Blackwell and Schocken, 1970.
Wach, J. *Sociology of Religion.* University of Chicago Press, 1964.
Weber, M. *The Sociology of Religion.* Beacon Press, 1963.

SOC303 THE INDIVIDUAL IN SOCIETY

Seminars per week - 1
Assessment: Essays - 1; Seminar papers - 2

An examination of some theories from a cross cultural perspective of the nature of society and their assumptions with regard to the nature of the individual implicit in such theories.

TEXTBOOKS

The New Testament
Ouspensky, P.D. *In Search of the Miraculous.* Routledge and Kegan Paul, 1950.
Watts, A. *The Book: On the Taboo Against Knowing Who You Really Are.*

Plus:

Original writings of traditional sociological theorists: particularly Marx, Weber, Durkheim, Comte, Parsons, Mills. (Detailed reference list can be obtained from Tutor in charge of the course).

SOC304 MILITARY SOCIOLOGY

Seminars per week - 1
Assessment: Essays - 1; Seminar papers - 2; Compulsory excursion to the Royal Military College, Duntroon.

Warfare continues to absorb a considerable portion of all government spending. Yet the military machine, its aims, functions, and interactions with the rest of society, is only hazily understood. The focus of this subject will be upon the development of modern military systems, and their real and projected employments.

TEXTBOOKS

Gammage, W. *The Broken Years: Australian Soldiers in the Great War.* Penguin, Australia, 1976.
Gray, J.G. *The Warriors.* Harper and Row, New York, 1970.
Howard, Michael. *Studies in War and Peace.* Temple Smith, London, 1970.

SOC305 SOCIOLOGY OF MIGRATION

Seminars per week - 1
Assessment: Essays - 1; Seminar papers - 2

This subject will explore the role of migrants and migration in host societies, with particular reference to Australia.

TEXTBOOKS

A detailed list of the various sources to be consulted by students will be supplied at the beginning of the course.

SOC218 SOCIAL STRATIFICATION B (CONT'D)

RECOMMENDED READING

Becker, H. *The Outsider.* Free Press, N.Y., 1963.
Berger, P. & Luckmann, T. *The Social Construction of Reality.* Penguin, Harmondsworth, 1971.
Greer, G. *The Female Eunuch.* Paladin, London, 1971.
Lenski, G. *Power and Privilege.* McGraw-Hill, New York, 1966.
Marcuse, H. *One Dimensional Man.* Abacus, London, 1972.

SOC219 TIME, WORK AND LEISURE B

Lectures per week - 1; Seminars per week - 1
Assessment: Essays - 1; Seminar papers - 2

This subject examines the relationship between time, work and leisure in modern industrial society. The subject emphasises the changing status of work as a value from pre-industrial through to post-industrial society.

TEXTBOOKS

Burns, T. ed. *Industrial Man.* Penguin Books, London, 1969.
Dubin, R. *The World of Work.* Prentice-Hall, Englewood Cliffs, N.J., 1958.
Faunce, W.A. ed. *Readings in Industrial Sociology.* Appleton-Century-Crofts, N.Y., 1967.

SOC222 SOCIOLOGY II ADVANCED: FOUNDATIONS OF SOCIOLOGICAL THOUGHT

One 2 hr seminar per week
Assessment: Essays - 1; Seminar assignments - 1

This subject will explore the central sociological concerns of Karl Marx and relate these to the writings of Max Weber and Emile Durkheim. The contribution of Marx to mainstream sociological theory and to forms of contemporary society will be examined from this base.

TEXTBOOKS

Bottomore, T.B. & Rubel, M. *Karl Marx: Selected Writings in Sociology and Social Philosophy.* Penguin, 1974.
Giddens, A. *Capitalism and Modern Social Theory - An Analysis of the Writings of Marx, Durkheim and Max Weber.* Cambridge University Press, London, 1971.

SOC223 SOCIOLOGY II ADVANCED: CONTEMPORARY EUROPEAN SOCIOLOGY

Seminars per week - 1
Assessment: Essays - 1; Seminar assignments - 1

This subject will look at recent trends in sociological theory arising largely from the resurgence of interest in Marx during the mid 1960's. Specifically, it will focus on the substantive concerns and implicit methodologies of Marcuse, Habermas, Sartre, Berger and Luckmann, Lefebvre, Levi-Strauss, Althusser and Gurvitch.

RECOMMENDED READING

Selected works by the abovementioned authors. Titles to be distributed at commencement of course. In addition, the following general works:

Desan, W. *The Marxism of Jean-Paul Sartre.* Peter Smith, Gloucester, Mass., 1974.
Lichtheim, G. *From Marx to Hegel.* Orbach and Chambers, London, 1971.
Radnitsky, G. *Continental Schools of Metascience.* Akademiforlaget, Goteborg, Sweden, 1968.

300-LEVEL

SOC301 CONTEMPORARY CULTURE A

Seminars per week - 1
Assessment: Essays - 1; Seminar papers - 2

This subject is centred around an investigation of communication in modern society. Communication tends to be a residual topic, but its operation and aims are not clearly understood. Detailed examination will focus upon the mass media, pop music and science fiction.

SOC301 CONTEMPORARY CULTURE A (CONT'D)

TEXTBOOKS

A detailed list of the various sources to be consulted by students will be supplied at the beginning of the course.

SOC302 RELIGION AND SOCIETY

Seminars per week - 1
Assessment: Essays - 1; Seminar papers - 2

An historical and cross-cultural examination of the relationahip between religion and other social institutions. Particular emphasis will be placed on the conflicting roles of religion as an integrative (conservative) and devisive (revolutionary) force in society.

TEXTBOOKS

Robertson, R. *The Sociological Interpretation of Religion.* Blackwell and Schocken, 1970.
Wach, J. *Sociology of Religion.* University of Chicago Press, 1964.
Weber, M. *The Sociology of Religion.* Beacon Press, 1963.

SOC303 THE INDIVIDUAL IN SOCIETY

Seminars per week - 1
Assessment: Essays - 1; Seminar papers - 2

An examination of some theories from a cross cultural perspective of the nature of society and their assumptions with regard to the nature of the individual implicit in such theories.

TEXTBOOKS

The New Testament
Ouspensky, P.D. *In Search of the Miraculous.* Routledge and Kegan Paul, 1950.
Watts, A. *The Book: On the Taboo Against Knowing Who You Really Are.*

Plus:

Original writings of traditional sociological theorists: particularly Marx, Weber, Durkheim, Comte, Parsons, Mills. (Detailed reference list can be obtained from Tutor in charge of the course).

SOC304 MILITARY SOCIOLOGY

Seminars per week - 1
Assessment: Essays - 1; Seminar papers - 2; Compulsory excursion to the Royal Military College, Duntroon.

Warfare continues to absorb a considerable portion of all government spending. Yet the military machine, its aims, functions, and interactions with the rest of society, is only hazily understood. The focus of this subject will be upon the development of modern military systems, and their real and projected employments.

TEXTBOOKS

Gammage, W. *The Broken Years: Australian Soldiers in the Great War.* Penguin, Australia, 1976.
Gray, J.G. *The Warriors.* Harper and Row, New York, 1970.
Howard, Michael. *Studies in War and Peace.* Temple Smith, London, 1970.

SOC305 SOCIOLOGY OF MIGRATION

Seminars per week - 1
Assessment: Essays - 1; Seminar papers - 2

This subject will explore the role of migrants and migration in host societies, with particular reference to Australia.

TEXTBOOKS

A detailed list of the various sources to be consulted by students will be supplied at the beginning of the course.

SOC306 SOCIOLOGICAL MEASUREMENT

Seminars per week - 1
Assessment: Essays - 1; Seminar papers - 2

This subject is designed to introduce students to some of the basic methods of quantitative measurement in sociology. Emphasis in the subject will be on survey measurement utilizing a computerized statistical package.

TEXTBOOKS

A detailed list of sources to be consulted by students will be supplied at the beginning of the course.

SOC311 CONTEMPORARY CULTURE B

Seminars per week - 1
Assessment: Essays - 1; Seminar papers - 2

This subject follows on from Contemporary Culture A, to explore in greater depth issues raised in the First Session course.

TEXTBOOKS

As in Contemporary Culture A: additional reading will be prescribed by the Lecturer in charge of the course.

SOC312 SCIENCE, TECHNOLOGY AND SOCIETY

Seminars per week - 1
Assessment: Essays - 1; Seminar papers - 2

This subject will locate present thinking in the sociology of science into recent development of theoretical and empirical literature and changes in perspective. It will explore the institutionalisation of science - treated both as knowledge system and social process; its forms of relationship to technology, and social/economic/political context in which this relationship is set. It will explore the nature of impact of the evolving role of science in structuring the role of man and woman in society, their consciousness and culture, together with action by society on science. Finally, the subject will explore the substance of contemporary social movements (e.g., ecology action, radical science, acculturation from Eastern thought) that are refashioning the relationship between science and society.

TEXTBOOKS

Barnes, B. ed. *Sociology of Science: Selected Readings.* Penguin Books, 1972.
Lakatos, I. & Musgrove, A. eds. *Criticism and the Growth of Knowledge.* Cambridge University Press, Cambridge, 1970. (Debate between Kuhn and Popper).
Pirsig, R. *Zen and the Art of Motor-Cycle Maintenance.* The Bodley Head Ltd., UK, 1974.
Roszak, T. *The Making of the Counter Culture.* Faber and Faber, London, 1972.

SOC313 THE INDIVIDUAL IN THE ORGANISATION

Seminars per week - 1
Assessment: Essays - 1; Seminar papers - 2

This subject uses work in the fields of psychology and sociology to study the relationship between the individual and the organisation at various organisational levels and in different situations. Emphasis is on the extent to which the individual has autonomy within the organisation.

TEXTBOOKS

Argyris, C. *The Applicability of Organizational Sociology.* Cambridge University Press, 1972.
Argyris, C. *Integrating the Individual and the Organisation.* Wiley, New York, 1964.
Argyris, C. *Personality and Organisation.* Harper and Row, New York, 1965.

SOC315 ETHOLOGY

Seminars per week - 1
Assessment: Essays - 1; Seminar papers - 2

This subject is designed to broaden the student's understanding of society through the study of non-human societies at various levels on the phylogenetic scale. For purposes of illustration particular emphasis will be given to insect and primate societies.

SOC315 ETHOLOGY (CONT'D)

TEXTBOOKS

A detailed list of the various sources to be consulted by students will be supplied at the beginning of the course.

SOC316 RESEARCH TECHNIQUES OF SOCIAL ENQUIRY

One 2 hr seminar per week
Assessment: Research project - 1; Seminar assignment - 1

This subject will explore the comparative validity of alternate techniques of research enquiry (with particular emphasis on the contrast of empirical vs. subjective forms of analysis). Students will gain experience in using traditional sociological tools of analysis - questionnaire, interviewing and formal observation, as well as in less conventional - film, video, participant and unobtrusive techniques of observation and measurement.

TEXTBOOKS

A detailed list of the various sources to be consulted by students will be supplied at the beginning of the course.

SOC317 INTERACTION AND SMALL GROUP BEHAVIOUR

Lectures per week - 1; Seminars per week - 1
Assessment: Essays - 1; Seminar papers - 2

The subject will move through an examination of theories of interpersonal relations and behaviour in small groups to some practical demonstrations of the less tangible underpinnings of human communication. Interactions in families and other special settings will be discussed in passing. Students will be expected to participate in group projects and exercises as well as written work.

TEXTBOOKS

Dunphy, D. *The Primary Group.* Appleton-Century-Crofts, U.S.A., 1972.
Mehrabian, A. *Silent Messages.* Wadsworth, Belmont, Cal., 1971.

SOC322 SOCIOLOGY III ADVANCED: SOCIOLOGY OF KNOWLEDGE I

Seminars per week - 1
Assessment: Essays - 1; Seminar papers - 1

The aim of this subject is to examine the epistemological basis for scientific theories from a sociological viewpoint. Basic themes include an examination of the culturally determined criteria for the acceptance of knowledge as "scientific", and some consideration of how scientific knowledge "progresses".

TEXTBOOKS

Berger, P. & Luckmann, T. *Social Construction of Reality.* Penguin, G.B., 1971.
Kuhn, T. *The Structure of Scientific Revolutions.* 2nd ed. University of Chicago Press, Chicago, 1975.
Popper, K. *Conjectures and Refutations.* Routledge and Kegan Paul, London, 1972.

SOC323 SOCIOLOGY III ADVANCED: SOCIOLOGY OF KNOWLEDGE II

Seminars per week - 1
Assessment: Essays - 1; Seminar papers - 1

The aim of this subject is to examine the relationship between methodology and knowledge. Attention will be given to the ways in which one may study social phenomena such that they retain their full meanings. That is, how may sociology avoid the trivialisation of a corpus of knowledge consisting of discrete statements of unique events?

TEXTBOOK

Mannheim, K. *Essays on the Sociology of Knowledge.* Routledge and Kegan Paul, London, 1952.

400-LEVEL

SOC401 KEY ISSUES IN CONTEMPORARY SOCIOLOGY I

Seminars per week - 1

For subject description and reading list, students should contact Chairman, Department of Sociology.

SOC411 KEY ISSUES IN CONTEMPORARY SOCIOLOGY II

Seminars per week - 1

For subject description and reading list, students should contact Chairman, Department of Sociology.

SOC431 RESEARCH WORKS IN PROGRESS SEMINAR

Seminars per week - 1

Subject description and reading list will vary each year, depending upon student research projects. For details, contact Chairman, Department of Sociology.

SOC490 SOCIOLOGY IV HONOURS THESIS

A supervised thesis of approximately 15,000 words about a theoretical issue in Sociology. The work can utilise field research and/or documentary material.

POSTGRADUATE STUDY

In 1978 students at The University of Wollongong may undertake studies leading to the graduate Diplomas in Accountancy, Education, Mathematics and Philosophy and to Masters and Doctoral degrees. The conditions governing the award of the doctorates contain not only the usual provision for the Doctor of Philosophy (PhD) by thesis but also a special provision for a PhD awarded on the basis of published work. The higher doctorates, the Doctor of Letters (DLitt) and the Doctor of Science (DSc), are awarded for published work which makes "an original contribution of distinguished merit ... to the knowledge and understanding of any branch of learning with which the University is concerned".

Students who enrol for postgraduate degrees and diplomas of the University of Wollongong will have to meet the Requirements of the University. The Departments' current research interests, the postgraduate degree and diploma Requirements, the Schedule of Graduate Subjects and the post-graduate subject descriptions may be found in the following pages. Diploma and degree courses are described under Departmental headings, e.g. The Diploma in Accountancy and Masters degrees in Accountancy are described under "ACCOUNTANCY".

Students requiring further information are advised to contact the Department concerned or the Student Enquiries Office, Admin. Building.

NOTE: Details of the enrolment procedures, charges and scholarships which apply at the time of printing are set out in earlier sections of this Calendar.

SOME CURRENT RESEARCH INTERESTS

Persons interested in pursuing postgraduate studies should contact the appropriate Departmental Chairman. The research interests of the staff cover a wide range of topics, and some current fields of interest are listed.

ACCOUNTANCY

Accounting theory construction and verification.
Administrative law.
Analysis of Australian company financial reporting practices.
Behavioural aspects of management information systems.
Business finance.
Business objectives.
Capital and profit concepts, including cost and value concepts, and their measurement.
Capital expenditure decision-making.
Constitutional law.
External reporting in the extractive industries.
History and development of accounting thought.
Interfirm comparisons.
International accounting.
Learning curve.
Small business management.
Statements on accounting standards by professional bodies, and other means of improving accounting practice.
Taxation.
The use of computers in accounting, auditing and business decision-making.
Trade practices and consumer protection.

BIOLOGY

Microbial Water Relations
Metabolic regulation in response to environmental stress.
Cellular mechanisms of retention of "compatible solutes" at high concentrations.

Photosynthesis
Chloroplast function and energy transfer within the plant cell.

Environmental Animal Physiology
Temperature regulation.
Thyroid function in vertebrates.
Hormones and metabolism.

Ecology
Ecological and behavioural mechanisms regulating spacial and temporal patterns of population distribution.
Theoretical and mathematical ecology.

CHEMISTRY

Information retrieval from computer-based libraries of mass spectral and other data.
Applications of computer controlled mass spectrometers to analytical problems.
Investigation of the role of ozone and its metastable cyclic conformer in atomospheric phenomena.

CHEMISTRY (CONT'D)

Quantum Theoretical search for potential high energy chemical lasers.
Prediction of the electronic structure and properties of transition metal complexes in crystalline and biological environments.
Spectroscopic investigation of simple transition metal complexes in crystals at cryogenic temperatures.
Development of sensitive new analytical methods for organic nitrogen compounds and nitrogen oxides.
Use of perioxides for wastewater treatment.
Development of computerised feed forward control systems for cyanide, sulphide, phenols and other contaminants.
Surface chemistry of iron oxides.
Isolation and structure elucidation of alkaloids from a New Guinean plant.
Synthetic modification of tylocrebrine, an antileukaemia agent.
Synthetic approaches to brain-active drugs.
Trace analysis especially related to electrochemical techniques.
Solvent effects in acid-base studies.
Thermodynamics of non-reacting systems involving high temperature calorimetry.
The Application of Chemical Ionization Mass Spectrometry to the analysis of biological fluids.
The determination of absolute configuration of asymmetric molecules by gas chromatography and mass spectrometry.
The sequencing of tryptic peptides by Cathepsin "C" and mass spectrometry.
Adsorption studies on supported metal catalyst systems.
Exchange reactions on heterogeneous catalysts.
Detector systems based on specificity of heterogeneous catalysed reactions.
Variable temperature (4-300^{o}K) Magnetochemistry of First Row Transition Metal Polynuclear Complexes.
Structure and Properties of Iron(III) Complexes of Substituted Benzimidazoles and Carboxylic Acids.
Structure and Properties of oxygen carrying transition Metal Complexes.
Structure and Properties of Transition Metal Complexes of Polydentate Schiff Base Ligands.
A Study of the Infrared Spectra of Transition Metal Complexes using the Metal Isotope Substitution Method.
Variable Temperature (4-300^{o}K) Magnetochemistry of Polynuclear Transition Metal Complexes.
Structure and Properties of Lanthanide Schiff Base Complexes.

CIVIL ENGINEERING

Load Distribution in Orthotropic Bridge Decks.
Dynamic Behaviour of Elastic Plate Systems.
Road Materials Research - Skid Resistance.
The C.C.T.V. Camera as a Research Tool.
Stress Analysis Using Holography.
The Analysis of Stress Distribution Produced at Abrupt Changes in Section.
The Investigation of Curvature Produced in Plates with Edge Loading Using Moire Fringe Techniques.
The Analysis of Whole Stress Fields under Impact Conditions.
Experimental Analysis of Structures.
The Development of High speed Photographic Techniques.
Identification of System Dynamic Characteristics by Cross Correlation Analysis.
Stability of Natural Slopes.
Finite Element Applications in Geomechanics.
Soil Anisotropy.
Temperature Wave Method Applied to Determining Fracture Toughness.
Hydrology of the Storm Rainfall-Runoff Process.
Mathematical Modelling of a Hydrologic System.
A Computerised System for the Design of Prestressed Multispan Box Girder Bridges.
Cracking and the Rigidities of Concrete Multicellular Bridge Decks.
The Use of Granulated Slag in Concrete.
The Use of Granulated Slag in Asphaltic Surfacings.
Transport requirements in the Municipality of Shellharbour.
Preparation of Noise Level Maps.
Planning and Design of Buildings for Comfort.
Non-Linear Analysis of Box-Type Structures by Special-purpose Finite Element Techniques.

ECONOMICS

Industrial economics.
Urban and regional studies.
Economic development.
Economics of migration.
Labour economics.
Monetary economics.
Natural resource economics.
International economics.

EDUCATION

Classificatory ability in Australian children.
Cognitive development of minority groups.
Convergent, divergent and operational thinking among white and Aboriginal children.
Curriculum studies and development.
Effects of mass media on children.
Enrichment programmes for disadvantaged preschoolers.
Schooling and social class.
Socialization of children, migrants and minority groups.
Educational administration.
Organizational behaviour.
Open education.
Work preparation of the mildly mentally retarded.
Migrant education through the media.

ELECTRICAL ENGINEERING

Automatic control.
Plant identification.
Electrostatic precipitation.
Static converters.
Electrical machines.
Computer systems.
Reliability techniques.
Large-scale systems.
Communications.
Computer-aided analysis and design.
Transportation.

ENGLISH

Old English language and literature.
Middle English language and literature.
Early-Tudor literature.
Elizabethan literature.
Early seventeenth century literature.
The works of James Joyce.

EUROPEAN LANGUAGES

19th and 20th century French novel and theatre
Literature, painting and film in 20th century France.
The "Nouveau Roman".
Linguistics applied to the teaching of French as a second language.
Intonation analysis.
Audio-visual methods in the teaching of French.
Italian "verismo": 19th century realism (Verga, Capuana, De Roberto).
Pedagogical aspects of teaching Italian.
Italian-American "teatro populare".

GEOGRAPHY

Transport systems analysis.
Agricultural geography.
Coastal geomorphology.
Fluvial geomorphology.
Urban studies.
Biogeography.
Population studies.
Regional development and planning.
South-east Asian studies.

GEOLOGY

The geology of coal measures.
Rock magnetism and related geophysical phenomena.
Textures and petrochemistry of igneous and metamorphic rocks.
Invertebrates of the Early and Middle Palaeozoic of Australasia.
Terrestial and shallow marine sedimentology.
Igneous petrology of the Illawarra district.
Organic geochemistry.
Economic and environmental geology.
Geothermal properties.

HISTORY

19th and 20th century English social and political History.
French History from 1650.
Russian History from 1825.
Religious History in Australia and Modern Britain.
Industrial, Trade Union and socio-political history of Australia.
Modern South East Asian history.

HISTORY AND PHILOSOPHY OF SCIENCE

Early 19th century British philosophy of science.
Women and science.
The history of evolutionary biology.
Social relations of science in the 19th and 20th centuries.
19th and 20th century genetics.

MATHEMATICS

Numerical analysis.
Matrix analysis.
Oceanography.
Nuclear reactor theory.
Computer science.
Statistical decision theory.
Probability.
Operations research.
Functional analysis.
Measure theory.
Abstract algebra.
Logic.
Set theory.
Topology.
Continuum mechanics.
Non-linear partial differential equations.

MECHANICAL ENGINEERING

Determination of flow properties of bulk solids.
Dynamic analysis and optimization of bulk handling systems.
Flow of granular materials.
Design of bins for bulk solids.
Computer simulation.
Process modelling and control.
Random signal analysis and stochastic processes.
System identification studies.
Computer aided control system design.
Multivariable control system theory and design.
Some applications of solar energy.
Boiling heat transfer.
Exhaust emissions from internal combustion engines.
Propagation of waves in small bore tubes.
Treatment and disposal of industrial effluents.

METALLURGY

Deformation and fracture at elevated temperatures, with particular reference to multiphase materials.
Solidification of metals.
High temperature calorimetry.
Development of precision testing equipment for studies of metal deformation in uniaxial and biaxial tension.
Analysis and structural interpretation of plastic behaviour in metals.
Studies of transformations in various alloys having the property that shape deformation by loading at some appropriate temperature is recovered by heating at some higher temperature (shape memory alloys).
Metallographic studies of alloys of commercial importance.
Studies of the structures developed in metals by recrystallisation, with particular reference to rapid recrystallisation.
Studies of flow phenomena in packed beds.

PHILOSOPHY

Interpretation and evaluation of Kant's critical philosophy.
Philosophical logic, with special reference to existence and truth.
Legal and political obligation and its basis.
Aesthetics of Benedetto Croce.

PHILOSOPHY (CONT'D)

Private enterprise based social philosophy.
Philosophy of mind.
Marxism.
Anarchism.
The liberal theory of the state.
Self-determination and secession ethics.
The concept of privacy and the right to privacy.
Identity and criteria.
Mathematical logic - its history, development and applications.
Probability and its theoretical interpretation.
Induction.
Responsibility, with reference to action, motive and intention.
Issues arising from the Catholic doctrine of double effect.
Contemporary aspects of Thomistic thought.
The ethical evaluation of the life and teachings of Jesus.

PHYSICS

Astronomy - Visible and Infrared.
Experimental Nuclear Physics.
Infra-red Detectors.
Musical Acoustics.
Scattering of Light by Solids.
Solid State Spectroscopy of Impurities in Semi-Conductors.
Studies of Electronic Wave Functions in Solids.

PSYCHOLOGY

Accidents in industry - psychological and physical factors.
Achievement motivation.
Action research and organizational development in industry and other organizations.
Attitudes.
Autonomic components of the orienting reaction.
Classical and instrumental autonomic conditioning.
Decision and risk taking.
Disadvantaged children.
Gestalt therapy.
Human learning.
Intensive groups.
Personnel - selection and placement.
Prediction of academic success.
Psychophysiology of the autonomic nervous system.
Sex roles.
Social psychology of industry.
Student guidance and counselling services.
Time perception.

SOCIOLOGY

Knowledge and Theory
The sociology of knowledge.
The development of "interpretive" sociological theory and research.
The dialectic in social theory.
The cultural location of Eastern and Western knowledge systems.

Sociology of Science
Development of an "interpretive" sociology of science.
Mission-orientation.
Professional socialisation.
Research communication and production.
The impact of science and technology on industry and society.
Science, technology and developing countries.

Social process
Self concept development and socialisation theory.
Interaction and small group behaviour.
Sociology of conflict.

Social Phenomena
Sociology of organisations.
Professions - established vs. marginal.
Consumer behaviour.
Sociology of migration, migrant integration and education.
Military sociology.
Religion, ideology and belief systems.

CONDITIONS FOR THE AWARD OF GRADUATE DIPLOMAS

1 The Diploma may be awarded by the Council on the recommendation of the Academic Senate to a candidate who has completed an approved course of study.

2 An application to register as a candidate for a diploma shall be made on the prescribed form which shall be lodged with the Registrar at least one full calendar month before the commencement of the course.

3 (i) An applicant for registration as a candidate for the diploma shall have been admitted to the degree of Bachelor in the University or other approved institution in an appropriate department.

(ii) In special circumstances a person may be permitted to register as a candidate for a diploma if he submits evidence of such academic and professional attainments as may be approved by the Academic Senate.

4 Notwithstanding any other provisions of these conditions, the Academic Senate may require an applicant to demonstrate fitness for registration by carrying out such work and sitting for such examinations as the Academic Senate may determine.

5 The approval of the Chairman of the appropriate Department for the proposed programme must be obtained by the candidate prior to enrolment. For the purpose of this regulation the Chairman of Department will normally be the Chairman of the Department providing supervision of the project, or if there is no project, the major field of study.

6 A candidate for a diploma shall complete subjects approved by the Chairman of the appropriate Department, which shall total not less than 48 credit points.

7 No candidate shall, without the approval of the Academic Senate be enrolled at the same time for any other degree or diploma in the University or elsewhere.

8 The results of examinations shall be submitted to the Academic Senate which shall recommend whether or not the diploma be awarded.

9 A candidate shall be required to pay such charges as may be determined from time to time by the Council.

CONDITIONS FOR THE AWARD OF BACHELOR POSTGRADUATE DEGREES

At present, the University offers one Bachelor Postgraduate degree -- the Bachelor of Education. Students interested in this degree should consult the conditions for the award of the Bachelor of Education printed under the Department of Education heading in the Postgraduate Courses section, (page 349).

MASTERS' DEGREE REQUIREMENTS

1 The degree of Master may be conferred by the Council on the recommendation of the Academic Senate to a candidate who has with the approval of the Academic Senate satisfactorily completed:

(a) a thesis embodying the results of an investigation; or
(b) study comprising formal coursework; or
(c) study comprising formal coursework and a minor thesis;

and who has satisfied the other requirements specified for the award of the degree.

2 An application to register as a candidate for the degree of Master shall be made on the prescribed form which shall be lodged with the Registrar at least one full calendar month before the commencement of the session in which the candidate intends to register.

3 The candidate for registration for the degree of Master shall have qualified for:

(a) a degree of bachelor in the University; or
(b) a degree from another institution approved by the Academic Senate.

4 In appropriate circumstances, a person may be permitted to register as a candidate for the degree if he submits evidence of such academic and professional attainments as may be approved by the Academic Senate.

5 A candidate who is qualified for the degree of Bachelor with honours or equivalent may be considered for the award of Master after the completion of two academic sessions of full-time study or its equivalent by obtaining an aggregate of not less than 48 credit points from the schedule of graduate subjects approved by the Academic Senate.

6 A candidate qualified for the degree of Bachelor of a standard below honours may be considered for the award of the degree of Master after the completion of four academic sessions of full-time study or its equivalent by obtaining an aggregate of not less than 96 credit points of which not less than 48 credit points shall be obtained in respect of subjects taken from the schedule of graduate subjects approved by the Academic Senate.

7 Notwithstanding any other provisions of these conditions the Academic Senate may require an applicant to demonstrate fitness for candidature by carrying out such work and sitting for such examinations as it may determine.

8 In every case, before permitting an applicant to register as a candidate, the Academic Senate shall be satisfied that adequate supervision and facilities are available.

9 An approved candidate shall register with the University in one of the following categories:

(a) a student undertaking full-time study; or
(b) a student undertaking part-time study.

10 No candidate shall, without the approval of the Academic Senate, be enrolled at the same time in any other degree or diploma in the University or elsewhere.

11. A candidate may apply to the Academic Senate for change of registration from the degree of Master to the degree of Doctor of Philosophy.

12 A candidate who is undertaking full-time study shall present himself for examination not later than six academic sessions from the date of his registration. A candidate who is undertaking part-time study shall present himself for examination not later than ten academic sessions from the date of his registration. In exceptional cases an extension of these times may be granted by the Academic Senate.

13 The maximum period for a candidate to re-apply after discontinuation shall be determined by the Academic Senate.

14 Every candidate for the degree by thesis or a combination of formal coursework and minor thesis where the thesis is not less than 24 credit points as approved by the Academic Senate shall comply with the following:

(a) he shall undertake where required by the Academic Senate a formal course of study appropriate to his research;
(b) he shall take such examinations and perform such other work as may be prescribed by the Academic Senate;
(c) he shall submit four copies of the thesis embodying the results of an investigation;
(d) the thesis shall be presented in a form which complies with the requirements of the University for the preparation and submission of higher degree theses;
(e) he may submit for consideration any work he has published;
(f) a candidate required to submit a thesis may not submit as the main content of his thesis any work or material which he has previously submitted for a University degree or other similar award except as permitted by section 20(v) of the Requirements for the award of Doctor of Philosophy.

15 For each candidate required to submit a thesis there shall be at least two examiners one of whom shall be external to the University appointed by the Academic Senate to examine the thesis.

16 After examining the thesis the examiners may:

(a) recommend that the thesis reaches a satisfactory standard; or
(b) recommend that the candidate be required to resubmit his thesis in revised form after a further period of study and/or research; or
(c) recommend that an oral examination be held to determine whether the candidate has reached a satisfactory standard; or
(d) recommend without further test that the candidate be not awarded the degree of Master.

17 Every candidate for the degree by formal coursework shall have approved by the Adademic Senate a programme of study recommended by the Chairman of the appropriate Department.

18 For the purposes of these requirements the Chairman of a Department will normally be the Chairman of the Department providing supervision of the project or if there is no project the major field of study.

19 The investigation, formal coursework or any other work as provided in sections (14) and (17) shall be carried out under the direction of a supervisor or supervisors appointed by the Academic Senate under such conditions as it may determine.

20 The results of examinations including where appropriate the examination of the thesis shall be submitted to the Academic Senate and the Academic Senate shall recommend whether or not the candidate may be admitted to the degree.

21 A candidate shall be required to pay such charges as may be determined from time to time by Council.

The Masters' Degrees approved under these requirements are:

Master of Arts
Master of Commerce
Master of Education
Master of Engineering
Master of Metallurgy
Master of Science

CONDITIONS FOR THE AWARD OF DEGREE OF DOCTOR OF PHILOSOPHY

The Degree of Doctor of Philosophy may be granted by the Council on the recommendation of the Academic Senate to a candidate who has made an original and significant contribution to knowledge and who has satisfied the following requirements -

1 A candidate for registration for the degree of Doctor of Philosophy shall -

(i) normally hold an honours degree from the University; or

(ii) hold an honours degree of equivalent standing from another institution approved by the Academic Senate;

(iii) if he holds a degree without honours from the University or other approved institution have achieved by subsequent work and study a standard recognised by the Academic Senate as equivalent to honours; or

(iv) in exceptional cases, submit such other evidence of general and professional qualifications as may be approved by the Academic Senate on the recommendation of the Graduate Studies Committee.

2 When the Academic Senate is not satisfied with the qualifications submitted by a candidate, the Graduate Studies Committee may require him, before he is permitted to register, to undergo such examination or carry out such work as it may prescribe.

3 A candidate for registration for a course of study leading to the degree of Doctor of Philosophy shall -

(i) apply to the Registrar on the prescribed form at least one calendar month before the commencement of the session in which he desires to register;

(ii) submit with his application a certificate from the Chairman of the University Department in which he proposes to study, stating that the candidate is a fit person to undertake a course of study and research leading to the degree of Doctor of Philosophy, and that the Department is willing to undertake the responsibility of supervising the work of the candidate, and of reporting to the Academic Senate at the end of the course on the merits of the candidate's performance in the prescribed course.

4 Subsequent to registration the candidate shall pursue a programme of advanced study and research for at least six academic sessions, save that -

(i) a candidate fully engaged in advanced study and research for his degree, who before registration was engaged upon research to the satisfaction of the Academic Senate may be exempted from not more than two academic sessions;

(ii) in special circumstances the Academic Senate may grant permission for the candidate to spend not more than one calendar year of his programme in advanced study and research at another institution provided that his work can be supervised in a manner satisfactory to the Academic Senate;

(iii) in exceptional cases, the Academic Senate on the recommendation of the Graduate Studies Committee may grant permission for a candidate to be exempted from not more than two academic sessions.

5 A candidate who is fully engaged in research for the degree shall present himself for examination not later than eight academic sessions from the date of his registration. A candidate not fully engaged in research shall present himself for examination not later than fourteen academic sessions from the date of his registration. In exceptional cases an extension of these times may be granted by the Academic Senate.

6 The candidate shall be required to devote his whole time to advanced study and research and to report annually to the Academic Senate, save that -

(i) the Academic Senate may permit a candidate on application to undertake a limited amount of University teaching or outside work which in its judgement will not interfere with the continuous pursuit of the proposed course of advanced study and research;

(ii) a member of the full-time staff of the University may be accepted as a part-time candidate for the degree, in which case the Academic Senate shall prescribe a minimum period for the duration of the programme;

(iii) in special circumstances, the Academic Senate may accept as a part-time candidate for the degree a person who is not a member of the full-time staff of the University, but who in the opinion of the Academic Senate has a substantial research record and is engaged in an occupation which leaves the candidate substantially free to pursue his programme in a department of the University. In such a case the Academic Senate shall prescribe for the duration of his programme a minimum period which, in its opinion, having regard to the proportion of his time which he is able to devote to the programme in the appropriate University department, is equivalent to the six sessions ordinarily required;

(iv) no candidate will be accepted under clause 6(iii) unless his employer agrees in writing that he will be free to attend the University on an average of one day per

week, and the Academic Senate is satisfied that he can spend a minimum of 20 hours per week on his programme of research.

7 Every candidate shall pursue his programme under the direction of a supervisor or supervisors appointed by the Academic Senate from the full-time members of the University staff. The work, other than field work, shall be carried out in a department of the University save that in special cases the Academic Senate may permit candidates to conduct their work at other places where special facilities not possessed by the University may be available. Such permission will be granted only if the direction of the work remains wholly under the control of the supervisor.

The Academic Senate may on written application from a candidate, approve a change of supervisor or supervisors after consultation with the Departmental Chairman.

8 The Academic Senate shall approve the topic of the research. After the topic has been approved it may not be changed except with the permission of the Academic Senate.

9 Not later than four academic sessions after registration the candidate shall submit the title of his thesis for approval by the Academic Senate. After the title has been approved it may not be changed except with the permission of the Academic Senate.

10 A candidate may be required by the Academic Senate to attend a formal course of study appropriate to his work.

11 On completing his course of study every candidate must submit a thesis which complies with the following requirements -

(i) the greater proportion of the work described must have been completed subsequent to registration for the PhD degree;

(ii) it must be an original and significant contribution to the knowledge of the subject;

(iii) it must be written in English except that a candidate in the Faculty of Humanities may be required by the Academic Senate, on the recommendation of the supervisor, to write the thesis in an appropriate foreign language;

(iv) it must reach a satisfactory standard of expression and presentation.

12 The thesis must present the candidate's own account of his research. In special cases work done conjointly with other persons may be accepted, provided the Academic Senate is satisfied of the candidate's part in the joint research.

13 Every candidate shall be required to preface his thesis with a short abstract comprising not more than 600 words.

14 A candidate may not submit as the main content of his thesis any work or materials which he has previously submitted for a University degree or other similar award.

15 The candidate shall give in writing two months' notice of his intention to submit his thesis and such notice shall be accompanied by the appropriate charge.

16 Five copies of the thesis will be submitted to the Registrar in a form which complies with the requirements of the University for the preparation and submission of higher degree theses.

17 The Academic Senate will request the supervisor to submit a certificate stating that the candidate has completed the prescribed course of study.

18 The University will retain the five copies of the thesis submitted for examination.

19 There shall normally be three examiners of the thesis, appointed by the Academic Senate on the recommendation of the Graduate Studies Committee, of whom one shall normally be an internal examiner and two shall be external examiners.

20 After examining the thesis the examiners may -

(i) decide that the thesis reaches a satisfactory standard; or

(ii) decide that the thesis reaches a satisfactory standard subject to minor revisions; or

(iii) recommend that the candidate be required to re-submit his thesis in revised form after a further period of study and/or research; or

(iv) recommend that the candidate be required to submit to a further examination; or

(v) recommend that the candidate be allowed to submit the thesis for a Masters degree; or

(vi) recommend without further test that the candidate be not awarded the degree of Doctor of Philosophy.

21 If the thesis reaches the required standard, the examiners may recommend that the candidate be examined orally, and, at their discretion, by written papers and/or practical examinations on the subject of the thesis and/or subjects relevant thereto.

22 If the thesis is of satisfactory standard but the candidate fails to satisfy the examiners at the oral or other examinations, the examiners may recommend that the University permit the candidate to re-present the same thesis and submit to a further oral, practical or written examination within a period specified by them but not exceeding three academic sessions.

23 At the conclusion of the examination, the examiners will submit to the Graduate Studies Committee a concise report on the merits of the thesis and on the examination results, and the Academic Senate shall recommend whether or not the candidate may be admitted to the degree.

24 No candidate shall, without the approval of the Academic Senate be enrolled at the same time for another degree or diploma in the University or elsewhere.

25 A candidate shall be required to pay such charges as may be determined from time to time by the Council.

SPECIAL CONDITIONS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

1 A candidate wishing to proceed to the PhD Degree under these Requirements shall be required to give proof of a significant contribution to scholarship.

2 Except as provided in Requirement 2.1 any person may be a candidate for the PhD Degree who is a graduate of the University or of the University of New South Wales, having completed the requirements for the Degree at Wollongong University College and who, either

(a) is of not less than eight years' standing from admission to his first degree of the University, or

(b) is of not less than two years' standing from admission to a Masters Degree of the University provided that he is of not less than eight years' standing from admission to his first degree of some other University.

2.1 A person who is not a graduate of the University but who is a member of the full-time academic staff of the University of at least five years' standing, provided that he is of not less than eight years' standing from admission to his first degree of some other University, may be a candidate for the PhD Degree.

3 A candidate for admission to the PhD Degree under these requirements shall make his application in writing to the Registrar, stating the Department with which he considers that the subject of his contribution to scholarship is most nearly connected, and specifying the published work or works on which his claim for the degree is based. He shall at the same time send to the Registrar five copies of each of the published works specified in his application, and five copies of a list of these works.

4 A candidate shall also be required to declare whether or not any of the published works referred to in Requirement 3 have been submitted for a degree or diploma or other qualification at any other University. All the works submitted, apart from quotations, shall be written in or translated into English, unless in a particular case, the Academic Senate shall have allowed the candidate to submit work in some other language.

5 If the Academic Senate shall be of the opinion that the published work or works submitted constitute prima facie a qualification for the degree, they shall appoint and refer the application to not less than three examiners, at least two of whom shall be external.

6 The examination for the PhD Degree under these requirements shall consist of the submission of published work, and of an oral examination on the work submitted and on the general field of knowledge within which it falls.

7 Each examiner shall make an independent report on the published work or works before the oral examination and shall present questions to be asked at the oral examination.

8 If the examiners are not satisfied with the candidate's performance in the oral examination, the Academic Senate may allow the candidate to present himself for that examination on one more occasion at a time to be appointed by the examiners.

9 If the examiners do not agree in their recommendations or if for any other reason the Academic Senate needs a further opinion or opinions on the merit of the work submitted, the Academic Senate may appoint an additional examiner or additional examiners. Any additional examiner or examiners thus appointed shall make an independent report on the work submitted by the candidate, and may at the discretion of such examiner or examiners, conduct an oral or written examination on that work and on the general field of knowledge within which it falls.

10 At the conclusion of the examination, the examiners will submit to the Academic Senate a concise report on the merits of the published work and on the examination results, and the Academic Senate shall recommend whether or not the candidate may be admitted to the degree.

11 If his application for the degree fails, the candidate may re-apply on one occasion only, after a period of not less than three years from the date of his original application.

12 No candidate for the degree shall be present at the deliberations of the Academic Senate in respect of his own candidature.

CONDITIONS FOR THE DEGREES OF DOCTOR OF LETTERS AND DOCTOR OF SCIENCE

1 There shall be the degrees of

(a) Doctor of Letters (DLitt)

(b) Doctor of Science (DSc)

2 The degree of Doctor deemed appropriate may be awarded by the Council on the recommendation of the Academic Senate for an original contribution (or contributions) of distinguished merit adding to the knowledge and understanding of any branch of learning with which the University is concerned.

3 A candidate for the degree of Doctor shall hold a degree of the University of Wollongong, or shall have been a full-time member of the academic staff of the University for a period of at least three years, or shall have been admitted to the status of a degree of the University, save that on the recommendation of the Graduate Studies Committee, the Academic Senate may vary this requirement to include former staff or students of the Wollongong University College. No candidate shall make application for the degree of Doctor until eight years after the award of his first degree.

4 (i) A candidate for the degree shall forward to the Registrar an application accompanied by the prescribed charge. With such application the candidate shall forward five copies (wherever possible) of the published work which he wishes to have examined. The publications shall be a record of original research or critical inquiry undertaken by the candidate, who shall state the sources from which his information was derived, and the extent to which he has availed himself of the work of others.

(ii) If the publications submitted, whether published in the candidate's sole name or under conjoint authorship, record work carried out conjointly, the candidate shall state the extent to which he was responsible for the initiation, conduct or direction of such conjoint research or inquiry, however published.

(iii) Where the principal publications, as distinct from supporting papers, incorporate work previously submitted for a degree or award the candidate shall clearly indicate which portion of the publications was so submitted.

(iv) A candidate may submit additional work, published or unpublished, in support of his application.

5 When the Graduate Studies Committee is satisfied that the published work is prima facie worthy of examination for the degree and a recommendation for the appointment of the examiners, the Graduate Studies Committee may recommend to the Academic Senate the appointment of at least three examiners of whom at least one shall normally be a member of the Department concerned and at least two shall be external examiners.

6 The candidate may be required to answer orally or in writing any questions concerning his work.

PREPARATION AND SUBMISSION OF THESES FOR HIGHER DEGREES

1 (a) Every candidate required to submit a thesis for the degree of Master shall submit to the Registrar four copies of the thesis and supporting work, together with a certificate from the supervisor to the effect that the thesis is in a form suitable for submission to the examiner. All copies of the thesis shall include a summary of approximately 200 words and a certificate signed by the candidate to the effect that the work has not been submitted for a degree to any other university or institution.

(b) Every candidate for the degree of Doctor of Philosophy shall submit to the Registrar five copies of the thesis and supporting work, together with a certificate from the supervisor to the effect that the thesis is in a form suitable for submission to the examiner. All copies of the thesis shall contain an abstract of the thesis comprising not more than 600 words and a certificate signed by the candidate to the effect that the work has not been submitted for a degree to any university or such institution except where specifically indicated.

2 The specifications currently approved for higher degree theses are as follows and any variation must be approved by the Academic Senate in consultation with the supervisor.

(a) The text of the thesis, normally in English, shall be in double-spaced typescript.

(b) The size of the paper shall approximate International Standards Organization paper size A4 (297mm x 210mm) except for illustrative material such as drawings, maps and printouts, on which no restriction is placed. The paper used in all copies shall be white opaque paper of good quality.

(c) The margins on each sheet shall be not less than 40mm on the bound side, 20mm on the unbound side, 30mm at the top and 20mm at the bottom.

(d) There shall be a title sheet set out in accordance with the style sheet attached.

3 The required copies of the thesis shall be either assembled securely in a demountable form, or bound, for transmission to the examiners. The demountable form required is one where the sheets are held by posts, and the method of binding is described in paragraph 4.

4 One copy of the thesis is for deposit in the University Library and shall be presented in a permanent and legible form, either in original typescript, stencil copy, offset printing or Xerographic copy, using dry plain paper copying technique.

If the thesis is submitted in demountable form, all copies are to be bound after the Examiners' Reports are received and any necessary alterations made, unless the Department does not wish its copy to be bound.

(i) The thesis shall be bound in boards, covered with buckram.

(ii) The lettering on the spine binding will be:

(a) 15mm from the bottom and across - UW;

(b) 70mm from the bottom and across - the degree and, underneath, the year of submission of the thesis, for example:

PhD
1975

(centred if possible); and

(c) evenly spaced between the degree and the top, reading upwards, the name of the author, initials first and surname or family name.

(iii) No further lettering or decoration is required on the spine or elsehwere on the binding.

(iv) In the binding of a thesis which includes mounted photographs, graphs, etc., or contains a back-pocket, packing shall be inserted at the spine to ensure even thickness of the volume.

A completed and signed "Declaration Relating to Disposition of Thesis" form shall be pasted to the inside of the front cover of the Library deposit copy. The form may be obtained from the office of the Registrar.

5 The copies of the thesis and other relevant work may be submitted for examination to the Registrar at any time provided the candidate has completed the minimum period of registration.

6 The degree will not be awarded until the bound Library-deposit copy is lodged with the Registrar.

7 Presently, the University holds that no thesis submitted for a higher degree should be retained in the Library for record purposes only, but within copyright privileges of the author, should be public property and accessible for consultation at the discretion of the Librarian.

8 In order to ascertain the wishes of a candidate for a higher degree regarding the use to which his thesis may be put, he is required to complete a declaration (obtainable from the Registrar) which would -

(a) grant the University Librarian permission to publish or to authorize the publication of the thesis or grant access to it (Form 1);

(b) withhold the right of the University Librarian to publish the thesis (Form 2);

(c) allow the University Librarian to publish the thesis under certain conditions (Form 3); or

(d) withhold the right of the University Librarian to grant access, without written consent of the author, to the thesis for up to three years (Form 4).

REQUIREMENTS FOR TITLE SHEET OF THESIS

(TITLE OF THESIS)

A thesis submitted in (partial) fulfilment of the
requirements for the award of the degree of

(NAME OF DEGREE)

from

THE UNIVERSITY OF WOLLONGONG

by

(AUTHOR'S NAME, DEGREE(S) HELD)

(NAME OF DEPARTMENT)
(YEAR)

SCHEDULE OF GRADUATE SUBJECTS

DIPLOMA IN EDUCATION

Number	*Subject*	*Credit Points*
EDUC901	Australian Education	4
EDUC902	Educational Practice	4
EDUC903	Educational Psychology	4
EDUC904	Sociology of Education	4
EDUC905	Philosophy in Education	4
EDUC910	Communication Skills	3
EDUC911	Health Education	3
EDUC912	Physical Education	2
EDUC914	Electives	4
EDUC915	Teaching Practice	6
EDUC916	Education Seminars	4
EDUC921	Economics and Commerce Method	3
EDUC922	English Method	3
EDUC923	Geography Method	3
EDUC924	History Method	3
EDUC925	Mathematics I Method	3
EDUC926	Science I Method	3
EDUC935	Mathematics II Method	3
EDUC936	Science II Method	3

BACHELOR OF EDUCATION

SECTION 1

Number	*Subject*	*Credit Points*	*Session Offered*	*Pre-Requisite*	*Remarks*
EDUC939	Educational Research Methodology and Design	16	3		Not to count with EDUC946
EDUC940	Educational Psychology Topic A	8	1		
EDUC941	Educational Psychology Topic B	8	2	EDUC940	
EDUC942	Educational Sociology Topic A	8	1		
EDUC943	Educational Sociology Topic B	8	2	EDUC942	
EDUC944	Comparative Education and History of Education	8	1		
EDUC945	Philosophy of Education and Theories of Education	8	2	EDUC944	

SECTION 2

Number	*Subject*	*Credit Points*	*Session Offered*	*Pre-requisites & Remarks*
EDUC946	Introduction to Educational Research Methodology	8	1 or 2 or 3	Not to count with EDUC939
EDUC947	Introduction to Curriculum Theory and Development	8	"	
EDUC948	School Administration	8	"	
EDUC949	Dynamics of Classroom Interaction	8	"	
EDUC950	Developmental Theories and School Educational Practice	8	"	
EDUC951	Special Topic in Education A	8	"	Demonstrated expertise in a special area of Educational practice
EDUC952	Special Topic in Education B	8	"	Demonstrated expertise in a special area of Educational practice

MASTER OF ARTS

Number	*Subject*	*Credit Points*
	ACCOUNTANCY*	
ACCY903	Accounting Theory	8
ACCY904	Current Developments in Accounting Thought - Financial	8
ACCY913	Current Developments in Accounting Thought - Managerial	8
ACCY914	Management Planning and Control	8
ACCY953	Studies in Taxation	8
ACCY905	International Accounting	8
ACCY973	History and Development of Accounting Thought	8
ACCY906	Issues in Financial Accounting and Reporting	8
ACCY923	Investment Analysis and Management	8
ACCY983	Special Topic A	8
ACCY984	Special Topic B	8
ACCY993	Research Essay	8
ACCY994	Project	16
ACCY995	Research Report	24
ACCY996	Thesis	48

**NOTE:* A combination of Economics and Accountancy subjects may be approved by the Chairmen of the two Departments and:
Subjects aggregating not more than 12 credit points may be selected from those offered by other Departments where approval is given by the Chairmen of the respective Departments (i.e., the Department offering the subject on one hand, and on the other, either Accountancy or Economics as appropriate in each case. The appropriate Department would be the Department in which the student had taken or planned to take more than 48 credit points in honours subjects for the undergraduate degree and graduate subjects for this degree).
A candidate may not include for this degree subjects similar in content to subjects included in the honours part of the undergraduate course.

Number	*Subject*	*Credit Points*
	ECONOMICS*	
ECON901	Monetary Economics	8
ECON902	Advanced International Monetary Economics	8
ECON903	Public Finance	8
ECON904	Public Sector Economics	8
ECON905	Input-Output Analysis	8
ECON906	History of Economic Thought	8
ECON911	Advanced International Economics	8
ECON912	Labour Economics	8
ECON913	Industrial Economics	8
ECON914	Economics of Social Welfare I	8
ECON915	Economics of Social Welfare II	8
ECON916	Microeconomic Analysis	8
ECON921	Econometric Models	8
ECON991	Project	16
ECON992	Research Report	24
ECON993	Thesis	48
	EDUCATION	
EDUC965	Major Thesis	48
	ENGLISH	
ENGL999	Major Thesis	48
	EUROPEAN LANGUAGES	
EURO900	Major Thesis	48
	GEOGRAPHY	
GEOG901	Issues in the Philosophy and Methodology of Geography	12
GEOG902	Special Seminar in Geography	12
GEOG903	Special Project in Geography	24
GEOG907	Advanced Topics in Economic Geography	12
GEOG908	Advanced Topics in Social Geography	12
GEOG909	Advanced Topics in Urban Geography	12
GEOG911	Advanced Topics in Fluvial Geomorphology	12
GEOG912	Advanced Topics in Coastal Geomorphology	12
GEOG913	Advanced Topics in Environmental Management	12
GEOG921	Research Report in Geography A	12
GEOG922	Research Report in Geography B	12
GEOG923	Minor Thesis in Geography	24
GEOG999	Major Thesis	48
	HISTORY	
HIST973	Major Thesis	48
	HISTORY AND PHILOSOPHY OF SCIENCE	
HPS999	Major Thesis	48

*See *NOTE* p. 321

Number	*Subject*	*Credit Points*
	PHILOSOPHY	
PHIL913	Advanced Philosophical Topics 913	48
PHIL999	Major Thesis	48
	PSYCHOLOGY	
PSYC901	Psychology Report	6
PSYC999	Major Thesis	48
	SOCIOLOGY	
SOC999	Sociology: Major Thesis	48

MASTER OF COMMERCE

	ACCOUNTANCY*	
ACCY903	Accounting Theory	8
ACCY904	Current Developments in Accounting Thought - Financial	8
ACCY913	Current Developments in Accounting Thought - Managerial	8
ACCY914	Management Planning and Control	8
ACCY953	Studies in Taxation	8
ACCY905	International Accounting	8
ACCY973	History and Development of Accounting Thought	8
ACCY906	Issues in Financial Accounting and Reporting	8
ACCY923	Investment Analysis and Management	8
ACCY983	Special Topic A	8
ACCY984	Special Topic B	8
ACCY993	Research Essay	8
ACCY994	Project	16
ACCY995	Research Report	24
ACCY996	Thesis	48
	ECONOMICS*	
ECON901	Monetary Economics	8
ECON902	Advanced International Monetary Economics	8
ECON903	Public Finance	8
ECON904	Public Sector Economics	8
ECON905	Input-Output Analysis	8
ECON906	History of Economic Thought	8
ECON911	Advanced International Economics	8
ECON912	Labour Economics	8
ECON913	Industrial Economics	8
ECON914	Economics of Social Welfare I	8
ECON915	Economics of Social Welfare II	8
ECON916	Microeconomic Analysis	8
ECON921	Econometric Models	8
ECON991	Project	16
ECON992	Research Report	24
ECON993	Thesis	48

*See *NOTE* p. 321

Number	*Subject*	*Credit Points*
MASTER OF EDUCATION		
	EDUCATION	
EDUC953	Educational Psychology A	8
EDUC954	Educational Psychology B	8
EDUC955	Curriculum Studies A	8
EDUC956	Curriculum Studies B	8
EDUC957	Educational Administration and Organisation A	8
EDUC958	Educational Administration and Organisation B	8
EDUC959	Educational Research and Design of Experiments*	8
EDUC960	Special Topic in Education A**	8
EDUC961	Special Topic in Education B**	8
EDUC962	Minor Project in Education#	8
EDUC963	Major Project in Education##	16
EDUC964	Minor thesis	24
EDUC965	Thesis	48
MASTER OF ENGINEERING		
	CIVIL ENGINEERING	
CIVL910	Advanced Foundation Engineering	5
CIVL901	Advanced Mechanics of Solids I	5
CIVL902	Advanced Mechanics of Solids II	5
CIVL909	Advanced Soil Mechanics	5
CIVL916	Analysis and Design of Bridge and Related Structures	5
CIVL908	Civil Engineering Computations	5
CIVL904	Concrete Technology	5
CIVL914	Engineering Hydrology	5
CIVL915	Estuary and Coastal Engineering	5
CIVL912	Experimental Methods in Civil Engineering	5
CIVL913	Finite Element Methods in Structural Engineering	5
CIVL905	Highway Materials	5
CIVL917	Numerical Methods in Civil Engineering	5
CIVL903	Theory of Elasticity	5
CIVL907	Traffic Engineering	5
CIVL906	Transportation Engineering	5
CIVL911	Vibration of Structures	5
CIVL953	Advanced Studies in Civil Engineering	5
CIVL954	Advanced Studies in Waste Disposal & Treatment 1	5
CIVL955	Advanced Studies in Waste Disposal & Treatment 2	5
CIVL956	Advanced Studies in Waste Disposal & Treatment 3	5
CIVL950	Thesis	8
CIVL951	Thesis	28
CIVL952	Major Thesis	48
CIVL999	Advanced Topics in Engineering	48

* Strongly recommended for each candidate unless otherwise recommended by Supervisor.
**Demonstrated expertise in an area of educational practice or theory.
Not to count with Major Project in Education or Minor Thesis.
##Not to count with Minor Project in Education or Minor Thesis.

Number	*Subject*	*Credit Points*
	ELECTRICAL ENGINEERING	
ELEC901	Computer Aided Analysis and Design	6
ELEC911	Reliability Engineering	6
ELEC921	Matrix Analysis of Electrical Machines	6
ELEC922	Machines in Control Systems	6
ELEC923	Static Converters	6
ELEC924	Advanced Power Systems	6
ELEC931	Control Computing	6
ELEC941	Control System Analysis and Design	6
ELEC942	Optimal Control Systems	6
ELEC943	Nonlinear Control Systems	6
ELEC944	Sampled-Data Control Systems	6
ELEC961	Noise and Information Theory	6
ELEC962	Electromagnetic Fields and Antennas	6
ELEC963	Microwave Devices and Electronics	6
ELEC971	High Voltage Properties of Materials	6
ELEC972	Air Pollution Control Techniques	6
ELEC981	Mathematical Methods in Electrical Engineering 1	6
ELEC982	Mathematical Methods in Electrical Engineering 2	6
ELEC999	Advanced Topics in Engineering	48
ELEC951	Thesis	48
ELEC952	Thesis	24
ELEC953	Report	12
	MECHANICAL ENGINEERING	
MECH901	Advanced Heat Transfer 1	5
MECH902	Advanced Heat Transfer 2	5
MECH903	Statistical Thermodynamics	5
MECH904	Gas Dynamics and Compressible Fluid Flow	5
MECH905	Advanced Dynamics	5
MECH906	Experimental and Analytical Modelling	5
MECH907	Design of Control Systems I - Multivariable Systems	5
MECH908	Computer Aided Design	5
MECH909	Wastewater Treatment and Disposal	5
MECH910	Water Resource Management	5
MECH911	Bulk Solids Handling Systems 1	5
MECH912	Bulk Solids Handling Systems 2	5
MECH913	Pneumatic & Hydraulic Transport of Bulk Solids	5
MECH914	Air Pollution	5
MECH915	Noise Pollution	5
MECH916	Design of Control Systems II - Optimal Control	5
MECH917	Refrigeration and Air Conditioning	5
MECH918	Design of Control Systems III - Inverse Nyquist Array Techniques	5
MECH919	Special Topics in Mechanical Engineering	5
MECH920	Numerical Methods in Mechanical Engineering	5
MECH950	Dissertation	8
MECH951	Dissertation	28
MECH952	Dissertation	48
MECH999	Advanced Topics in Engineering	48

Number	*Subject*	*Credit Points*
MASTER OF METALLURGY		
	METALLURGY	
METL991	Metallurgy Project 2	20
METL999	Advanced Topics in Metallurgy	30
METL990	Major Thesis	48
MASTER OF SCIENCE		
	BIOLOGY	
BIOL999	Major Thesis	48
	CHEMISTRY	
CHEM901	Advanced Topics in Inorganic Chemistry	16
CHEM902	Advanced Topics in Organic Chemistry	16
CHEM903	Advanced Topics in Physical Chemistry	16
CHEM904	Advanced Topics in Analytical Chemistry	16
CHEM905	Advanced Topics in Quantum Chemistry	16
CHEM906	Advanced Topics in Spectroscopy	16
CHEM918	Chemistry Report	16
CHEM910	Selected Topics in Chemistry	16
CHEM920	Chemistry Research Project	48
	GEOGRAPHY*	
GEOG999	Major Thesis	48
	GEOLOGY	
GEOL999	Major Thesis	48
	MATHEMATICS	
MATH911	Advanced Mathematics Methods A	6
MATH912	Continuum Mechanics	6
MATH913	Non-Linear Partial Differential Equations	6
MATH914	Quantum Mechanics in Hilbert Space	6
MATH915	Advanced Mathematics Methods B	6
MATH931	Linear Programming	6
MATH932	Optimization Techniques	6
MATH933	Sparse Matrix Techniques	6
MATH934	Advanced Numerical Analysis	6
MATH935	Numerical Linear Algebra	6
MATH941	Simulation Techniques	6
MATH942	Replacement Theory and Populations	6
MATH943	Queueing	6
MATH944	Inventory Control	6
MATH945	Principles of Operations Research	6
MATH951	Coastal Dynamics	6
MATH952	Data Analysis	6
MATH953	Waves and Currents	6

*The Department now offers an MA by coursework - see the Master of Arts Schedule

Number	*Subject*	*Credit Points*
	MATHEMATICS (CONT'D)	
MATH961	Functional Analysis	6
MATH962	Harmonic Analysis	6
MATH963	Integration Theory and its Applications	6
MATH964	Distributions	6
MATH965	Independence Proofs in Set Theory	6
MATH966	Logic and Set Theory	6
MATH967	Combinatory Logic	6
MATH968	Topics in Algebra A	6
MATH969	Topics in Algebra B	6
MATH971	Decision Theory	6
MATH972	Regression Analysis	6
MATH973	Time Series	6
CSCI911	Computer Methods	6
CSCI921	Information Processing Systems	6
CSCI931	Compilers	6
CSCI941	Advanced Topics in Computing Science	6
MATH991	Project	12
MATH992	Minor Thesis	24
MATH993	Thesis	48
	PHYSICS	
PHYS905	Mathematical Methods for Physicists A	6
PHYS910	Advanced Project in Physics A	6
PHYS942	Elementary Particle Physics	6
PHYS944	Advanced Quantum Mechanics	6
PHYS946	Advanced Solid State Physics	6
PHYS955	Mathematical Methods for Physicists B	6
PHYS960	Advanced Project in Physics B	6
PHYS970	The Physics of Measurements	6
PHYS990	Plasma Physics	6
PHYS999	Major Thesis	48

DESCRIPTIONS OF POSTGRADUATE COURSES

NOTE: The following Departments offer Masters degree study by research thesis only:

BIOLOGY	BIOL999	MAJOR THESIS
ENGLISH	ENGL999	" "
EUROPEAN LANGUAGES	EURO900	" "
GEOGRAPHY	GEOG999	" "
GEOLOGY	GEOL999	" "
HISTORY	HIST973	" "
HISTORY AND PHILOSOPHY OF SCIENCE	HPS999	" "
PSYCHOLOGY	PSYC999	" "
SOCIOLOGY	SOC999	" "

ACCOUNTANCY

DIPLOMA IN ACCOUNTANCY

In accordance with the general conditions governing graduate diplomas, candidates for the Diploma in Accountancy must have been admitted to the degree of Bachelor in the University or other approved institution, and, for the award of the Diploma, are required to complete subjects approved by the Chairman of the Department of Accountancy, and aggregating not less than 48 credit points in one year of full-time study or equivalent.

An important purpose of the Diploma is to provide in a recognized University course a means for accountancy students to study the additional subjects required for cross credit to professional examinations, and which were not included in their Bachelor degree. Further, students who had included in the BCom degree all subjects required for admission to the Australian Society of Accountants could study appropriate 400-level subjects leading to advancement to Senior Associate status. The Diploma may also appeal to graduates in other disciplines who wish to obtain a background in Accounting and Financial Management.

Specific requirements for the Diploma are:

1. Not less than 30 credit points (of the minimum required of 48) are to be obtained from 200- and/or 300-level subjects offered by the Department of Accountancy.
2. With the approval of the Chairman of the Department of Accountancy subjects may be selected from 400-level subjects offered by the Department of Accountancy. (Any subjects selected under this clause may be included in the 30 credit points required under 1.).
3. The whole course for the diploma is to be approved by the Chairman of the Department of Accountancy as providing a coherent course of study.

THE MASTER OF COMMERCE DEGREE, ACCOUNTANCY OR ECONOMICS

A. 1. Candidates who have completed the requirements for the award of the BCom(Hons) in Accountancy or Economics, or an equivalent degree, may qualify for the award of the MCom degree by completing at honours standard any one of the following courses of study.

(i) Thesis (48 credit points).

or (ii) Project (16 credit points) and course work aggregating not less than 32 credit points.

or (iii) Research report (24 credit points) and course work aggregating not less than 24 credit points.

or (iv) Course work aggregating not less than 48 credit points.

2. Subjects are to be selected from 900-level subjects offered by either the Department of Accountancy or the Department of Economics, and included in the Schedule of Graduate Subjects; provided that:

(a) A combination of Economics and Accountancy subjects may be approved by the Chairmen of the two Departments, and

(b) Subjects aggregating not more than 12 credit points may be selected from those offered by other Departments, where approval is given by the Chairmen of the respective Departments (i.e., the Department offering the subject on one hand, and on the other, either Accountancy or Economics as appropriate in each case. The appropriate Department would be the Department in which the student had taken or planned to take more than 48 credit points in Honours subjects for the undergraduate degree and graduate subjects for this degree.).

3. A candidate may not include for this degree subjects similar in content to subjects included in the honours part of the undergraduate course.

B. Candidates who have completed the requirements for the BCom degree, or equivalent degree, may, subject to the attainment of a satisfactory standard in that degree, be permitted to register as candidates for the MCom degree. Such candidates may qualify for the award of the degree by completing at honours standard subjects aggregating not less than 96 credit points of which subjects aggregating not less than 48 credit points shall be selected in accordance with the requirements (1) to (3) above.

THE MASTER OF ARTS DEGREE, ACCOUNTANCY OR ECONOMICS

A. 1. Candidates who have completed at an acceptable standard the requirements for the award of the BA(Hons) in Accountancy or Economics, or an equivalent degree, may qualify for the award of the MA degree by completing at honours standard any one of the following subjects, or combination of subjects:

(i) Thesis (48 credit points).

or (ii) Project (16 credit points) and course work aggregating not less than 32 credit points.

or (iii) Research report (24 credit points) and course work aggregating not less than 24 credit points.

or (iv) Course work aggregating not less than 48 credit points.

2. Subjects are to be selected from 900-level subjects offered by either the Department of Accountancy or the Department of Economics, and included in the Schedule of Graduate Subjects; provided that:

(a) A combination of Economics and Accountancy subjects may be approved by the Chairmen of the two Departments, and

(b) Subjects aggregating not more than 12 credit points may be selected from those offered by other Departments, where approval is given by the Chairmen of the respective Departments (i.e., the Department offering the subject on one hand, and on the other, either Accountancy or Economics as appropriate in each case. The appropriate Department would be the Department in which the student had taken or planned to take more than 48 credit points in Honours subjects for the undergraduate degree and graduate subjects for this degree.).

3. A candidate may not include for this degree subjects similar in content to subjects included in the honours part of the undergraduate course.

B. Candidates who have completed the requirements for the BA degree, or equivalent degree, may, subject to the attainment of a satisfactory standard in that degree, be permitted to register as candidates for the MA degree. Such candidates may qualify for the award of the degree by completing at honours standard subjects aggregating not less than 96 credit points of which subjects aggregating not less than 48 credit points shall be selected in accordance with the requirements (1) to (3) above; and subjects not exceeding 48 credit points may be selected from the 400-level Honours subjects in Accountancy or Economics.

For details of the subjects listed below (with the exception of ACCY994, 995 and 996), refer to the 400-level Accountancy subjects with the same subject names in the "Description of Subjects" (Undergraduate section).

Contact Hours for each subject: 2 hr seminar per week
Assessment: Seminar presentation of assigned topic, essays and final examination

ACCY903 ACCOUNTING THEORY

ACCY904 CURRENT DEVELOPMENTS IN ACCOUNTING THOUGHT - FINANCIAL

ACCY913 CURRENT DEVELOPMENTS IN ACCOUNTING THOUGHT - MANAGERIAL

ACCY914 MANAGEMENT PLANNING AND CONTROL

ACCY953 STUDIES IN TAXATION

ACCY905 INTERNATIONAL ACCOUNTING

ACCY973 HISTORY AND DEVELOPMENT OF ACCOUNTING THOUGHT

ACCY906 ISSUES IN FINANCIAL ACCOUNTING AND REPORTING

ACCY923 INVESTMENT ANALYSIS AND MANAGEMENT

ACCY983 SPECIAL TOPIC A

ACCY984 SPECIAL TOPIC B

ACCY993 RESEARCH ESSAY

ACCY994 PROJECT

ACCY995 RESEARCH PROJECT

ACCY996 THESIS

CHEMISTRY

MASTER OF SCIENCE

Introduction and Objectives

There have been many rapid advances in Chemistry, particularly in chemical instrumentation, over the past decade. Many techniques and applications are now in common use which did not even exist five years ago. There is therefore a need for Chemistry graduates, especially those of some standing, to become aware of, and proficient in, at least some of these new developments. The proposed courses are intended to provide for the specific needs and interests of applicants from both Industry and Education.

Structure of the Course

The course will be made up of subjects selected from those described below, in accordance with the Conditions for the Award of the Degree of Master.

The subject CHEM910 Selected Topics in Chemistry is intended to be a "broadening" subject and is compulsory for all students undertaking the degree by course work unless they have already passed CHEM411, which is similar in structure.

Students entering with an Honours degree in Chemistry will take subjects to a value of 48 credit points.

Students entering with a pass degree will take subjects to a value of 96 credit points.

Subjects to be offered each year will depend upon student and staff availability.

Entry to the Course

This is subject to the approval of the Academic Senate on the advice of the Chairman, Department of Chemistry.

Selection of Subjects

Students must consult the Chairman, Department of Chemistry, for approval of their proposed choice of subjects.

Reading Lists

Reading lists will be provided by the staff involved in each subject.

Pre-requisites

The minimum pre-requisite for all subjects is that the student must have graduated with at least 24 credit points of 300-level Chemistry subjects.

CHEM901 ADVANCED TOPICS IN INORGANIC CHEMISTRY

Double session subject
56 hrs lectures, 56 hrs tutorials
Assessment: Written examination + Continual assessment + assignments + Seminar

Crystallography; Molecular structure determination by X-ray diffraction techniques; Advanced magnetochemistry. Magnetic properties of poly-nuclear transition metal complexes. Transition metal ions in cubic and axially symmetric crystal fields; Inorganic Chemistry and problems in biological systems; Metal clusters, Boron cage compounds; Inorganic rings and chains; Organometallic chemistry, and others added as required.

CHEM902 ADVANCED TOPICS IN ORGANIC CHEMISTRY

Double session subject
56 hrs lectures, 56 hrs tutorials
Assessment: Written examination + Continual assessment + assignments + Seminar

Natural Products Chemistry; Photochemistry; Organic Synthesis and Analysis; Medicinal and Pharmaceutical Chemistry; Stereochemistry, and others added as required.

CHEM903 ADVANCED TOPICS IN PHYSICAL CHEMISTRY

Double session subject
56 hrs lectures, 56 hrs tutorials
Assessment: Written examination + Continual assessment + assignments + Seminar

Reaction kinetics; Linear free energy relationship; Surface chemistry and heterogeneous catalysis; Molecular structure and chemical reactivity; Gas chromatography, and others added as required.

CHEM904 ADVANCED TOPICS IN ANALYTICAL CHEMISTRY

Double session subject
56 hrs lectures, 56 hrs tutorials
Assessment: Written examination + Continual assessment + assignments + Seminar

Solvent effects, Thermochemistry; acidity and solubility; trace analysis; analytical chemistry of some elements; modern automation techniques; errors and limitations in analysis; and other topics as required.

CHEM905 ADVANCED TOPICS IN QUANTUM CHEMISTRY

Double session subject
56 hrs lectures, 56 hrs tutorials
Assessment: Written examination + Continual assessment + assignments + Seminar

Mathematical and Computational techniques in quantum chemistry; Quantum prediction of molecular properties and of reaction rates and specificity. Computer experiments and simulation of chemical systems. Energy transfer and storage processes in chemical systems; Energy trapping. Spectroscopic techniques in quantum chemistry; picosecond pulsed laser experiments, and others added as required.

CHEM906 ADVANCED TOPICS IN SPECTROSCOPY

Double session subject
56 hrs lectures, 56 hrs tutorials
Assessment: Written examination + Continual assessment + assignments + Seminar

Recent advances in instrumentation and applications in Mass Spectroscopy. U.V. - visible and I.R. Spectroscopy. N.M.R. Atomic absorption spectroscopy, and others added as required.

CHEM910 SELECTED TOPICS IN CHEMISTRY

Double session subject
56 hrs lectures, 56 hrs tutorials
Compulsory for all students doing MSc in Chemistry by coursework, except for students who have passed CHEM411
Not to count with CHEM411
Assessment: Written examination + Seminar

Theories concerning the creation of life on Earth; Organic and Inorganic Geochemistry and its effect on environment; Vitamins, hormones and important common drugs; Introduction to Digital Instrumentation; The Basic Nature and desirable properties of Materials (e.g. ceramics, glasses, polymeric and composite materials); Chemistry Through the Ages; Chemical Literature; Chemistry and Society; Computer Simulation of Complex Systems; and others added as required.

CHEM918 CHEMISTRY REPORT

Double session subject
112 hrs tutorials
Assessment: Substantial report

Under the supervision of staff appointed by the Chairman, Department of Chemistry, students will survey the chemical literature and prepare a report on a topic chosen by the supervising staff.

CHEM920 CHEMISTRY RESEARCH PROJECT

Assessment: Major thesis

Topic to be arranged in consultation with the Chairman, Department of Chemistry and approved by the Graduate Studies Committee.

CIVIL ENGINEERING

The Department of Civil Engineering offers the following opportunities for graduates to conduct research or pursue an advanced course of study:

1. Master of Engineering Degree by coursework.
2. Master of Engineering Degree by research thesis.
3. Master of Engineering Degree by combinations of coursework and research thesis.

1. *The Master of Engineering Degree by Coursework*

The Master of Engineering Degree by coursework is intended for engineers who have had some professional experience after graduating. It consists of lecture courses together with a project. The lectures and projects will be closely related where possible to the professional interest of those taking part.

2. *The Master of Engineering Degree by Research Thesis*

The Master of Engineering Degree by research thesis is intended for those engineers qualified and interested in specific problems.

3. *The Master of Engineering Degree by Combinations of Coursework and Research Thesis*

This is the more normal course for the younger Civil Engineer, and gives him training in research and also gives greater depth of understanding in specialist postgraduate areas.

MASTER OF ENGINEERING RESEARCH THESIS TOPICS

The following subject areas are available for graduates wishing to conduct research for the Master of Engineering Degree.

Transportation, Highway Materials; Planning for recreation, planning for urban and Regional purposes. Computer applications in Traffic Engineering. Economic analysis and highway inventories. Designs of highways, computer methods.

Estuary and coastal engineering, breakwater design, propagation of tides with estuaries, sediment transport. Hydraulic models.

Engineering hydrology, analysis of storms, development of catchment models, development of cost benefit methods for drainage.

Finite element methods, the application of finite element methods to the design of bridges and flat plate structures. Foundations, Slopes. Failure of rock and soil masses.

Mathematical theories of Elasticity and Plasticity applied to engineering problems. Experimental methods. Vibrations.

Materials, concrete, highway materials. Fabrication. Testing under cyclic loads. Programmed testing.

AIMS OF THE COURSE

The programmes of study allow the student to combine specialist postgraduate subjects according to his undergraduate background, with project work. It is intended to strengthen professional training in a context of problems and policies which reach beyond the conventionally recognised boundaries of single disciplines. Elective postgraduate subjects and introductions to disciplines in which the student has no experience, are available.

The programme for the Master of Engineering Degree offered by the Department of Civil Engineering has two explicit aims:

(a) *Specialist Training.* Postgraduate training is provided for students with appropriate backgrounds, to enable professional development in their particular discipline. This is achieved by providing access to existing postgraduate courses already offered by Civil Engineering.

(b) *Interdisciplinary Training.* An interdisciplinary framework is provided, within which postgraduate training in Civil Engineering may be integrated with other disciplines. This is achieved by the provision of limited access to concentrated study in other disciplines.

ENTRY REQUIREMENTS

Normally the course is of 1 year fulltime or 2 years part-time study for those candidates who possess a Bachelor Degree with Honours. Applicants possessing a Bachelor degree of a standard less than Honours will have their programme approved by the Academic Senate after consultation with the Chairman of the Department of Civil Engineering.

CIVL901 ADVANCED MECHANICS OF SOLIDS 1

Stresses in normally loaded flat plates and shells: Bending and deflection of long rectangular plates; bending and deflection of circular plates; bending stresses in thin-walled vessels; thermal stresses in thin-walled vessels.

Buckling: Lateral buckling of prismatic bars; energy method of calculating critical compressive loads; buckling of bars of variable cross section; effect of shearing force on the critical load; inelastic buckling of straight columns; buckling of circular rings and tubes under external pressure; buckling of beams without lateral supports; buckling of shafts by torsion; twistbend buckling, twist buckling of columns; buckling of rectangular plates.

Stresses and deformation of rotating discs: Uniform and varying thickness; uniform stress; sum and difference method; temperature gradients.

Effect of small inelastic strains on load carrying capacity: Notched bar in tension; residual stress; beam of rectangular cross-section; torsion of prismatical bars; ultimate load analysis - simple cases; thick cylinders.

RECOMMENDED READING

Little, R.W. *Elasticity.*
Prescott, J. *Applied Elasticity.*
Timoshenko, S.P. and Gere, J.M. *Theory of Elastic Stability.*
Wang, C.T. *Applied Elasticity.*

CIVL902 ADVANCED MECHANICS OF SOLIDS 2

Plasticity and metal forming: Theories of plasticity; plane strain problems in cartesian and polar co-ordinates; axially-symmetrical problems in cylindrical and spherical co-ordinates; effect of temperature strain rate and external friction on plastic deformation; applications to certain metal forming problems.

Elastic bodies in contact: Point and line contact; contact stresses; deflection of bodies in contact; effect of friction on contact stresses.

Fluctuating stresses: Endurance test; fatigue; effect of stress concentration on fatigue; mean stress, variable stress; fatigue under combined loading; theories of fatigue failure; factor of safety; corrosion fatigue.

Mechanical properties of materials at high temperature: Introduction to the mechanics of creep; deformation by creep; steady creep under general state of stress; creep under alternating stress; effect at temperature variations; stress relaxation due to creep; creep recovery.

Mechanical properties of materials at low temperature: Brittle fracture; propagation of brittle cracks; ductile-brittle transition; fracture toughness; notch ductility.

RECOMMENDED READING

Jaeger, J.C. *Elasticity Fracture and Flow.*
Johnson, W. & Mellor, P.B. *Plasticity for Mechanical Engineers.*
Prager, W. & Hodge, P.G. *Theory of Perfectly Plastic Solids.*
Timoshenko, S. and Goodier, J.N. *Theory of Elasticity.*

CIVL903 THEORY OF ELASTICITY

Basic concepts: Notation; components of stress and strain; plane stress and plane strain; equations of equilibrium and compatability; Airy's stress function; applications to the solution of two-dimensional problems in rectangular co-ordinates; polar co-ordinates; stress distributions symmetrical about an axis; application to the solution of various problems.

Torsion: Prismatical bars, St. Venant's theory; membrance and other analogies; torsion of rectangular bars, angles, channels, etc.; hollow shafts and thin tubes.

Stress concentration: Mathematical and experimental methods; stress concentration in tension and compression members; stress concentration in torsion; circular shafts of variable diameter; stress concentration in bending; investigation of stress concentration with models; photoelastic method of stress measurements.

Thermal stresses: One-dimensional temperature distributions; rectangular plate, turbine blade; two-dimensional temperature distributions; circular disc, turbine disc; allowable stresses at elevated temperatures; creep, fatigue, thermal shock.

Stress waves: Longitudinal waves in prismatic bars; longitudinal impact of bars.

RECOMMENDED READING

England, A.H. *Complex Variable Methods in Elasticity.*
Green, A.E. & Zerna, W. *Theoretical Elasticity.*
Lin, T.H. *Theory of Inelastic Structures.*
Timoshenko, S. and Goodier, J.N. *Theory of Elasticity.*

CIVL904 CONCRETE TECHNOLOGY

Mix design theories; design of high strength and lightweight concrete, elastic behaviour; strength, creep, shrinkage; significance of tests and properties of constituent materials; analysis of results; non-destructive tests; special concrete applications.

RECOMMENDED READING

A.S.T.M. Standards, Part 10. *Concrete and Mineral Aggregates*. Amer. Soc. for Testing Materials.
Lydon, F.D. *Concrete Mix Design*. A.S.
Neville, A.M. *Properties of Concrete*. Pitman.
Taylor, W.H. *Concrete Technology and Practice*. 3rd ed. A. & R.
Troxell, G.E., Davis, H.E. & Kelly, J.W. *Composition and Properties of Concrete*. 2nd ed. McGraw-Hill.
U.S. Bureau of Reclamation. *Concrete Manual*.
Relevant Australian Standards - to be specified during course.

CIVL905 HIGHWAY MATERIALS

Soil and roadmaking aggregate surveys; compaction of soil; road construction with soil and low-grade aggregates; mechanical, cement, bituminous, and resinous stabilisation; constructional methods in soil stabilisation.

The origin, preparation, constitution and rheology of bituminous binders; Mechanical and physical properties of bituminous materials. Close and open textured materials. Surface dressing. Plant. Sampling and testing. Maintenance.

Concrete construction. Materials; mixing; laying; sampling and testing. Maintenance.

Pavement design and evaluation - a review of current Australian, European and North American Practice.

RECOMMENDED READING

HMSO. *Soil Mechanics for Road Engineers*.
HMSO. *Bituminous Materials in Road Construction*.
O'Flaherty, C.A. *Highways*. Vols. I & II. Arnold.
UNESCO. *Low Cost Roads*.

CIVL906 TRANSPORTATION ENGINEERING

Roads & Pavements - design and construction. Airport Engineering - classification, design standards, layout & development, terminal facilities, City - airport transport systems; railroad engineering - urban rail transit, light rail rapid transit, advanced passenger trains, evaluation of service. Pipeline transportation - growth, storage, types, construction. Belt conveyors - goods and passengers; Undersea Transportation - vehicles, support systems.

RECOMMENDED READING

Hennes and Erke. *Fundamentals of Transportation Engineering*. McGraw-Hill.

CIVL907 TRAFFIC ENGINEERING

Characteristics of vehicles, drivers and pedestrians; vehicle speeds, volumes, journey times and their measurement. Road and intersection capacities. Urban transportation and town planning. Accidents. Traffic Management. Intersection Control. Parking studies. Traffic estimation and prediction. Highway inventories and sufficiency ratings. Economic analysis of highway improvements. Computer applications in traffic engineering.

RECOMMENDED READING

Hobbs & Richardson. *Traffic Engineering*. Vols. I & II. Arnold.
O'Flaherty, C.A. *Highways*. Vols. I & II. Arnold.
U.S. Institute of Traffic Engineering. *Traffic Engineering Handbook*.

CIVL908 CIVIL ENGINEERING COMPUTATIONS

(i) The use of problem oriented languages in solving Civil Engineering problems, including I.C.E.S. STRUDL, COGO, ROADS, TRANSET, PROJECT, BRIDGE, SEPOL, LEASE, TRAVOL. In general these subsystems can be applied to Structural systems, co-ordinate geometry, roadway analysis, transportation networks, project engineering bridge design, settlement problems, stability of slopes and traffic volume problems.

(ii) The development of general user programmes using ICES Command Definition Language, Command Interpreter System, ICETRAN.

CIVL908 CIVIL ENGINEERING COMPUTATIONS (CONT'D)

This course will concentrate on STRUDL which is designed for application to a wide range of Structural types, both two and three dimensional, including trusses, frames and continuous finite elements. Any combination of these components may be used with a variety of analysis and design procedures including linear elastic static analysis, finite element analysis, nonlinear geometric analysis, dynamic analysis, frame optimization, steel frame member design, and design and checking of reinforced concrete building frames including beams, columns, slabs, steel quantity and location, material take-off etc. Input data includes member and structure boundary conditions, prismatic or variable section members, any number of loading conditions consisting of any number of uniform, linear, or concentrated member loads, uniform or concentrated member loads, uniform or concentrated member distortions and temperature loads, and joint loads and joint displacements.

TEXTBOOKS AND RECOMMENDED READING

ICES User Manuals as advised during the course.

CIVL909 ADVANCED SOIL MECHANICS

Soil Structure and clay mineralogy; Yield criteria and theories of failure for soil masses; recent theories of soil behaviour; Theoretical and mathematical considerations concerning limiting equilibrium of soil structures; bearing capacity and stability of slopes, rigorous and simplified methods; Soil dynamics, forced harmonic vibrations, co-efficient of dynamic subgrade reaction, Recent developments in the theory of consolidation.

RECOMMENDED READING

Grim. *Clay Mineralogy.*
Harr. *Foundations of Theoretical Soil Mechanics.*
Lee. *Selected Topics in Soil Mechanics.*
Lee. *New Horizons - Soil Mechanics.*
Richart. *Soil Dynamics.*
Sokolovski. *Statistics of Soil Media.*
Terzaghi. *Theoretical Soil Mechanics.*

CIVL910 ADVANCED FOUNDATION ENGINEERING

General principle concerning selection of foundation type on different types of soil, particular reference to collapsing and swelling soils, compacted fill and non-uniform soils. Foundation design in relation to ground movements, settlement due to construction operations, performance observations.

Buoyancy rafts and basements, pier and caisson foundations, cofferdams, dam foundations.

Analysis and design of pile and raft foundations, pile groups, laterally loaded piles, sheet pile structures.

Computer methods of analysis; Finite element analysis for earth pressure, stress-distribution, bearing capacity, and seepage studies.

RECOMMENDED READING

Bowles. *Analytical and Computer Methods in Foundation Engineering.*
Leonards. *Foundation Engineering.*
Tomlinson. *Foundation Design and Construction.*
Tschebotarioff. *Foundations, Retaining and Earth Structures.*

CIVL911 VIBRATION OF STRUCTURES

Analysis of lumped mass systems with various degrees of freedom. Vibration of beams and other continuous structures. Vibration of buildings and bridges. Earthquake and blast loadings. Wind loadings.

RECOMMENDED READING

To be advised.

CIVL912 EXPERIMENTAL METHODS IN CIVIL ENGINEERING

Dimensional analysis and principles of similitude, model analysis and design of models. Instrumentation and special methods of measurement. Evaluation of data. Transient and cyclic phenomena. Photoelasticity, Moire Fringes and Holography.

RECOMMENDED READING

To be advised.

CIVL913 FINITE ELEMENTS METHODS IN STRUCTURAL ENGINEERING

Variational principles. Finite element techniques, displacement formulation, stress formulation, Finite strip procedure. Computer programming. Analysis of frames, plates and shells. Analysis of slab- and box-type bridge structures.

RECOMMENDED READING

To be advised.

CIVL914 ENGINEERING HYDROLOGY

Storm models, storm maximisation, extreme precipitation estimates, intensity-frequency-duration analysis, design storms; rainfall losses, infiltration models, design losses; advanced unit - hydrograph theory, synthetic unit hydrographs; hydrograph synthesis by runoff - routing; design floods for rural and urban catchments.

RECOMMENDED READING

Chow, V.T. *Handbook of Applied Hydrology.* McGraw-Hill.
Linsley, R.K., Kohler, M.A. & Paulhus, J.L. *Hydrology for Engineers.* McGraw-Hill.
Wiesner, C.J. *Hydrometeorology.* Chapman & Hall.

CIVL915 ESTUARY AND COASTAL ENGINEERING

Theory of deep and shallow water waves, wave generation and decay, wave breaking, wave forces on structures; harbour resonance and seiche action, wave refraction and diffraction; breakwater design; shoreline processes, beach protection; tidal theory, propagation of tides into estuaries; sediment transport, design of channels in alluvium; fixed and loose bed hydraulic models.

RECOMMENDED READING

Henderson, F.M. *Open Channel Flow.* Macmillan.
Ippen, A.T. *Estuary and Coastline Hydrodynamics.*
U.S. Army. Coastal Engineering Research Centre. *Shore Protection Planning and Design.*
Wiegal, R.L. *Oceanographical Engineering.*

CIVL916 ANALYSIS AND DESIGN OF BRIDGE AND RELATED STRUCTURES

Types of bridge; similarities between bridges and some plate- and shell-type building structures; loadings; analytical methods; load distribution technique, orthotropic plate theory, grillage and space frame methods, finite strip procedure, finite element method and finite difference approach; computer programme suites; design codes; design of super-structures; design of foundations.

RECOMMENDED READING

To be advised.

CIVL917 NUMERICAL METHODS IN CIVIL ENGINEERING

Application of digital and analogue computers to Civil Engineering problems, bounds of computation errors. Optimization techniques. Network techniques. Finite difference methods. Conveyance of numerical calculation processes.

RECOMMENDED READING

Hartree, D.R. *Numerical Analysis.*
Milne-Thomson, L.M. *The Calculus of Finite Differences.*
Schlaifer, R. *Analysis of Decisions Under Uncertainty.*
Synge, J.L. *The Hypercircle in Mathematical Physics.*
Whitehouse, G.E. *Systems Analysis & Design Using Network Techniques.*
Zukhovitsky, S.I. *Linear & Complex Programming and L.I. Avdeyeva.*

CIVL950 THESIS

Double session subject, 8 credit points

CIVL951 THESIS

Double session subject, 28 credit points

CIVL952 THESIS

Double session subject, 48 credit points

CIVL953 ADVANCED STUDIES IN CIVIL ENGINEERING

Topics will be selected from those areas of Civil Engineering in which staff members or visiting staff members to the department, are engaged in active research.

TEXTBOOKS AND RECOMMENDED READING

Reading list will be prescribed by Lecturer.

CIVL954 ADVANCED STUDIES IN WASTE DISPOSAL & TREATMENT 1

Theory of Physical, Chemical and Biological processes used in waste water treatment. Monitoring and control.

TEXTBOOKS AND RECOMMENDED READING

Reading list will be prescribed by Lecturer.

CIVL955 ADVANCED STUDIES IN WASTE DISPOSAL & TREATMENT 2

Industrial and solid waste disposal: landfill, incineration recycling. Pollution control. Systems design and layout.

TEXTBOOKS AND RECOMMENDED READING

Reading list will be prescribed by Lecturer.

CIVL956 ADVANCED STUDIES IN WASTE DISPOSAL & TREATMENT 3

Air pollution. Monitoring and control. Models and analytic methods. Industrial and traffic noise. Measurement and analysis. Acoustics. Insulation.

TEXTBOOKS AND RECOMMENDED READING

Reading list will be prescribed by Lecturer.

CIVL999 ADVANCED TOPICS IN ENGINEERING

Double session subject, 48 credit points

Details of this subject are the same as for ELEC999 Advanced Topics in Engineering, as described in the postgraduate entry under the Department of Electrical Engineering*, with the addition of the following two topics:

Advanced Metallographic Methods
Structure and Properties of Materials

The selection of the topics will be subject to the approval of the Chairman of the Department of Civil Engineering.

RECOMMENDED READING

A reading list will be given for each topic by the lecturer concerned.

ECONOMICS

MASTER OF COMMERCE AND MASTER OF ARTS DEGREES, ACCOUNTANCY OR ECONOMICS

See entry under Department of Accountancy.*

Composition of Courses:

Three hours per week for all of the subjects described below other than Project, Research Report and Thesis.

Assessment:

Continuous assessment by written assignments and Departmental examinations.

ECON901 MONETARY ECONOMICS

The course is in two sections. The first section compares the monetarist theory of money with the reinterpreted Keynesian theory of money, examining: theories and evidence on the demand for money; the relative stability debate; the transmission mechanism and the policy implications of both theories.

The second section examines conflicting theories such as Monetarist and Keynesian Neutral. The topics to be covered are: The theories of the supply of money; the effect of the growth of financial institutions on the efficacy of monetary policy; and the debate on the term structure of interest rules.

Much of the course will be based on the formal articles in which most of the debates have been carried. The following are considered useful references for the course.

RECOMMENDED READING

American Economics Association. *Reading in Monetary Theory.*
Cagan, P.C. *Determinants and Effects of Changes in the Stock of Money 1867-1960.* Columbia University Press, New York, 1965.
Carson, D. ed. *Banking and Monetary Studies.* Richard K. Irwin, Homewood, Ill., 1963.
Friedman, M. & Schwartz, Anna J. *A Monetary History of the United States, 1867-1960.* Princeton University Press, Princeton, N.J. 1963.
Friedman, M. *The Optimum Quantity of Money and other Essays.* Aldine Publishing Co., Chicago, 1969.
Gurley, J.G. & Shaw, E.S. *Money in the Theory of Finance.*
Johnson, H.G. *Essays in Monetary Economics.* Allen & Unwin, London, 1969.
Keynes, J.M. *The General Theory of Employment, Interest & Money.*
Leigonhufuud, A. *On Keynesian Economics and the Economics of Keynes.* Oxford University Press, 1968.
Patinkin, D. *Money, Interest and Prices: An Interpretation of Monetary and Value Theory.* 2nd ed. Ross Peterson, Evanston, Ill., 1956.
Pesek, B.P. & Soving, T.R. *Money, Wealth and Economic Theory.* Macmillan, New York, 1967.

ECON902 ADVANCED INTERNATIONAL MONETARY ECONOMICS

Foreign exchange markets; banking and financial institutions; money supply, price level and international adjustment; international monetary system.

RECOMMENDED READING

Aliber, R.Z. *The International Market for Foreign Exchange.* Praeger, 1969.
Baldwin, R.E. & Richardson, J.D. *Selected Topics in International Trade and Finance: A Book of Readings.* Little Brown, 1973.
Collery, A. *International Adjustment, Open Economies, and the Quantity Theory of Money.* Princeton University, 1971.
Einzig, P.A. *The Euro-Bond Market.* Macmillan, 1969.
Einzig, P.A. *The Dynamic Theory of Forward Exchange.* Macmillan, 1961.
Henning, C.N. *International Finance.* Harper, 1958.
Machlup, F. *Re-making the International Monetary System; the Rio Agreement and Beyond.* Johns Hopkins, 1968.
Mundell, R.A. *International Economics.* Macmillan, 1969.
Scitovsky, T. *Money and the Balance of Payments.* Rand McNally, 1969.

*See pp.328-329

ECON903 PUBLIC FINANCE

This course further develops topics encountered in the undergraduate Public Finance course. Particular emphasis will be placed on issues surrounding intergovernmental fiscal relations in a federal system. Questions of fiscal transfer mechanisms, divisions of powers and responsibilities and the equalisation measures which might be used will be considered.

RECOMMENDED READING

Colin & Wagner. *Federal Budget Projections*. Brookings, 1966.
Groves & Bish. *Financing Government*. Holt, Rinehart & Winston, 1973.
Maxwell, J.A. *Tax Credits & Intergovernmental Fiscal Relations*. Brookings, 1972.
Maxwell, J.A. *Financing State & Local Government*. Brookings, 1968.
Musgrave, R.A. ed. *Essays in Federal Fiscalsim*. Brookings, 1965.

ECON904 PUBLIC SECTOR ECONOMICS

The course examines the public sector as an economic entity in an industrial economy. The concept of a public good is discussed and the question of what goods the government should provide is examined. The growth of the public sector is analysed and the undernourishment thesis is examined. Public enterprises' pricing policies, goals, and efficiency are then examined. Finally the interaction between private and public sectors is considered.

RECOMMENDED READING

Buchanan. *Supply and Demand for Public Goods*. Rand McNally, 1971.
Grove. *Government and Industry in U.K.* O.U.P., 1971.
Miliband. *State in Capitalist Society*. W.U.P., 1972.
Shanks. *Lessons of Public Enterprise*. Macmillan, 1972.
Turvey. *Public Enterprises*. Pelican, 1970.

ECON905 INPUT-OUTPUT ANALYSIS

Design and estimation of input-output matrices. Basic equilibrium, optimising and forecasting techniques. Application to planning and some regional problems.

RECOMMENDED READING

Carter, A.P. and Brody, A. eds. *Contributions to Input-Output Analysis*, and *Applications to Input-Output Analysis*. North-Holland, 1970.
Miernyk, W.H. et. al. *Simulating Regional Economic Development*. Heath Lexington, 1970.
Stone, R. *Input-Output and National Accounts*. OEEC, 1961.
Stone, R. ed. *Input-Output Relationships*. A Program for Growth, Vol. 3, Chapman and Hall, 1963.

ECON906 HISTORY OF ECONOMIC THOUGHT

A study of the history of Economics, mainly concerned with the origins and development of modern Economics.

RECOMMENDED READING

Dobb, M. *Theories of Value and Distribution since Adam Smith*. Cambridge U.P.
History of Political Economy. Vol. 4, No. 2, 1972 - Papers on the Marginal Revolution.
Howard, M. & King, S.E. *Political Economy of Marx*. Longman, 1975.
Latsis, S. *Method and Appraisal in Economics*. Cambridge U.P., 1976.
Mini, P. *Philosophy and Economics*. University Presses of Florida, 1974.
Napoleoni, C. *Economic Thought of the Twentieth Century*. Martin Robertson, 1972.
O'Brien, D.P. *The Classical Economists*. Oxford University Press, 1975.
Seckler, D. *Thorstein Veblen and the Institutionalists*. Macmillan, 1974.
Shackle, G.L.S. *The Years of High Theory*. Cambridge U.P., 1967.

ECON911 ADVANCED INTERNATIONAL ECONOMICS

Aspects of some of the following topics are studied in depth:

1. Growth and Trade
2. Factor Transfers (Foreign Investment)
3. Tariffs
4. Import-Substituting Industrialisation
5. Foreign Exchange Market
6. Internal and External Balance (the two-gap model)

ECON911 ADVANCED INTERNATIONAL ECONOMICS (CONT'D)

RECOMMENDED READING

Adelman, I. *Practical Approaches to Development Planning.* Ch.4.
Berry, R.A. *Manipulation of Effective Protection by the Exchange Rate Under Some Real World Constraints.* The Manchester School, March, 1974.
Bruton, H.J. *The Import-Substitution Strategy of Economic Development: A Survey.* Pakistan Development Review. Vol. X(2), 1970.
Cameron, B.D. *Import-Substitution.* Economic Record, December, 1964.
Caves, R.E. & Jones, R.W. *World Trade and Payments.* Part IV.
Corden, W.M. *The Theory of Protection.*
Fane, G. *Import-Substitution and Export Expansion: Their Measurement and an Example of their Application.* Pakistan Development Review. Vol. XI(1), 1971.
Findlay, R. & Grubert, H. *Factor Intensities, Technological Progress and The Terms of Trade*, in Bhagwati, J. *International Trade.*
Johnson, H.G. *Aspects of the Theory of Tariffs.*
Johnson, H.G. *The Transfer Problem and Exchange Stability.* JPR, June, 1965.
McKinnon, R. *Foreign Exchange Constraints in Economic Development and Efficient Aid Allocation.* EJ, Vol. 74, 1964.
Oniki, H. & Uzawa, H. *Patterns of Trade and Investment* in Review of Economic Studies, 1964-65.
Papanek, G.F. *The Effects of Aid and Other Resource Transfers on Savings and Growth in Less Developed Countries.* EJ, September, 1972.
Purvis, D.D. *Technology, Trade and Factor Mobility.* EJ, September, 1972.
Treasury Economic Paper. *Overseas Investment in Australia.*
Tsiang, S.C. *The Role of Money in Trade Balance Stability: Synthesis of the Elasticity and Absorption Approach.* Readings in International Economics.
Weisskopf, T.E. *An Econometric Test of Alternative Constraints on the Growth of Underdeveloped Countries.* Review of Economics and Statistics. Vol. 54, 1972.

ECON912 LABOUR ECONOMICS

The theory of the labour market and applications to the Australian situation, including labour supply and demand. Special emphasis is placed on analysing the character of the workforce and structural changes in industries and occupations. Wage theory and practice are examined under conditions of collective bargaining and arbitration. The development of the arbitration system in Australia and principles of wage determination followed by the Commission are of particular importance. Wages and income policies, including indexation policies will also be studied, as will wage developments outside the arbitration system.

TEXTBOOK

Niland & Isaac. *Australian Labour Economics Readings.* Sun, 1975.

RECOMMENDED READING

Burton, Benham, Vaughn & Flanagan. *Readings in Labor Market Analysis.* Holt, Rinehart & Winston, 1971.
Isaac, J. *Wages and Productivity.* Cheshire, 1967.
Isaac & Ford. *Australian Labour Relations: Readings.* Sun, 1973.
Perlmen, M. *An Anthology of Labor Economics.* Wiley, 1972.
Portus, J.H. *Australian Compulsory Arbitration 1900-1970.* Hicks-Smith and Sons, 1971.
Rowan, R. *Readings in Labor Economics and Labor Relations.* Irwin, 1972.
Whitehead, D.H. *Stagflation and Wages Policy in Australia.* Longmans, 1974.
Wooton, B. *The Social Foundations of Wages.*
Wooton, B. *The Social Foundations of Wage Policy.* Unwin, 1962.

ECON913 INDUSTRIAL ECONOMICS

A study of industrial organisation and performance, decision-making criteria and constraints affecting output and distribution of revenue, market behaviour, and matters of ownership and control of the unit of organisation.

RECOMMENDED READING

Andrews, P.W.S. and Brunner, E. *Studies in Pricing.* Macmillan, London, 1975.
Australian Government. *Policies for Development of Manufacturing Industry.* (The Jackson Report), Canberra.
Cowling, K. ed. *Market Structure and Corporate Behaviour.* Gray Mills, London, 1973.
Hirst, R.R. & Wallace, R.H. eds. *Studies in the Australian Capital Market.* Cheshire, Melb., 1969.
Lamberton, D.M. ed. *Industrial Economics.* Pelican, Melb., 1972.
Lindgren, K.E. and Aislabie, C.J. *The Australian Firm.* McGraw-Hill, 1976.
Nieuwenhuysen, J.P. and Norman, N.R. *Australian Competition and Prices Policy.* Croom Helm, London, 1976.
Nieuwenhuysen, J.P. ed. *Australian Trade Practices.* 2nd ed. Croom Helm, London, 1976.
Riach, P.A. & Howard, D.O.A. *Productivity Agreements and Australian Wage Determination.* Wiley, Sydney, 1973.
Scherer, F.M. *Industrial Pricing.* McNally, N.Y., 1970.

ECON913 INDUSTRIAL ECONOMICS (CONT'D)

Stewardson and Davidson. *Economics and Australian Industry.* Longman, Melb., 1974.
Ward, T.S. *The Distribution of Consumer Goods.* Cambridge U.P., 1973.

ECON914 ECONOMICS OF SOCIAL WELFARE I

A study of the theoretical basis of economic policy decisions and the economic significance of criteria adopted or proposed for policy decisions about the use of public goods or about conditions affecting the use of private goods.

RECOMMENDED READING

Arrow, K.J. *Social Choice and Individual Values.* 2nd ed. Wiley, Yale, 1963.
de Villiers Graaff, J. *Theoretical Welfare Economics.* University Press, Cambridge, 1963.
Foster, C.D. *Politics, Finance, and the Role of Economics.* Allen and Unwin, London, 1971.
Little, I.M.D. *Welfare Economics.* Clarendon, Oxford, 1950.
Mishan, E.J. *Cost-Benefit Analysis.* Allen and Unwin, London, 1971.
Robbins, L. *The Nature and Significance of Economic Science.* 2nd ed. Macmillan, London, 1962.
Weintraub, A., Schwartz, E. & Aronson, J.R. *The Economic Growth Controversy.* Macmillan, N.Y., 1973.

ECON915 ECONOMICS OF SOCIAL WELFARE II

The course is concerned with aspects of the distribution of income. Various theories of distribution are studied, and these are related to welfare economics. In addition, there is considerable emphasis on empirical studies of functional and personal income distribution in various countries. The impact of the government sector on income distribution is studied. Particular emphasis is placed on the measurement of poverty and the economic measures which might be used to alleviate poverty.

TEXTBOOKS

Atkinson, A.B. ed. *Wealth, Income & Inequality.* Penguin, 1973.
Atkinson, A.B. ed. *Unequal Shares.* Pelican, 1974.
Pen, J. *Income Distribution.* Pelican, 1974.

RECOMMENDED READING

A.E.A. *The Distribution of National Income.*
Bronfenbrenner, M. *Income Distribution Theory.*
Johnson, H.G. *The Theory of Income Distribution.*
Schoville, J.G. *Perspectives on Poverty and Income Distribution.*
Titmuss, R. *Income Distribution and Social Change.*

ECON916 MICROECONOMIC ANALYSIS

Several areas of Microeconomic theory will be selected for advanced treatment. Within each topic contemporary applications will be explored after the development of a theoretical base.

RECOMMENDED READING

Becker, G.S. *Economic Theory.* Alfred Knopf, New York, 1971.
Henderson, J.M. & Quandt, R.E. *Microeconomic Theory: A Mathematical Approach.* 2nd ed. McGraw-Hill, New York, 1971.

ECON921 ECONOMETRIC MODELS

This is an applied course in econometric model building. Both single equations and multi-equation models will be analysed. Emphasis will be placed on the use of theory and *a priori* information in model modification and forecasting evaluation. Some background in theoretical econometrics is required for the course.

TEXTBOOKS

Johnston, J. *Econometric Methods.* 2nd ed. McGraw-Hill, 1973.
Wonnacott, R.J. & Wonnacott, T. *Econometrics.* Wiley, 1969.

RECOMMENDED READING

Christ, C.F. *Econometric Models and Methods.* Wiley, 1966.
Dhrymes, P.J. *Econometrics.* North Holland, 1970.
Naylor, H.N. *Computer Simulation Experiments with Models of Economic Systems.* John Wiley, 1971.
Rao, P. & Miller, L.L. *Applied Econometrics.* Wadsworth Pub. Co., 1971.
Theil, H. *Economic Forecasts and Policy.* 2nd ed. North Holland Pub. Co., 1961.
Theil, H. *Principles of Econometrics.* North Holland, 1971.
Wold, H. ed. *Econometric Model Building.* North Holland Pub. Co., 1964.

EDUCATION

DIPLOMA IN EDUCATION

The Diploma in Education is a professional course in education for graduates of this or another approved university who seek teacher qualifications. It also serves as an introduction to the research disciplines of education for those who will later pursue higher studies in the field. At present the course is for one year full-time. The various subjects involve lectures, seminars, tutorials, individual assignments and group exercises. Demonstrations of teaching methods and practice teaching are provided in co-operation with local schools.

Intending applicants for the Diploma in Education course are advised that it may be necessary to restrict enrolments to the course in 1978. If this is necessary, selection to the course will be made on the basis of academic merit and suitability of degree to teaching requirements.

Teacher Education Scholarship holders are advised that it is necessary for them to make application for the Diploma in Education course and should be aware that possession of a Scholarship does not guarantee admission to the course.

COURSE OUTLINE

Students are required to complete subjects as set out below, with a total of 48 credit points.

Hours per week are indicated in brackets. The decision as to whether subjects are offered in first or second session or both, is taken at enrolment time in the light of staff availability.

Education

Australian Education (2)
Educational Practice (2)
Educational Psychology (2)
Sociology of Education (2)
Philosophy in Education (2)
Seminars in both sessions (2)

Curriculum Studies and Teaching Methods

Students must study two methods, occupying 6 hours weekly including demonstration lessons.

Selected Topics

Physical Education (double session subject) (1)
Communication Skills (2)
Health Education (2)
Electives (4)

Supervised Teaching Practice

The equivalent of eight weeks in term time at schools in the Wollongong area, or elsewhere by arrangement with the Departmental Chairman.

EDUC901 AUSTRALIAN EDUCATION

This subject seeks to lift student awareness of problems in Australian education above the level of opinion and limited personal experience, by presenting them in their historical and comparative setting. Various developments in secondary and tertiary education are discussed, with a view to understanding the interplay of social, economic, political and ideological factors, and the need to subject them to more rigorous research.

TEXTBOOKS

Cowan, R.W.T. ed. *Education for Australians.* Cheshire, 1966.
Partridge, P.H. *Society, Schools and Progress in Australia.* Pergamon, 1968.
Report of the Committee Appointed to Survey Secondary Education in New South Wales (Wyndham Report). Sydney, Government Printer, 1957.

RECOMMENDED READING

Austin, A.G. *Australian Education 1788-1900.* Pitman, 1961.
Australian College of Education. *Teachers in Australia.* Cheshire, 1966.
Australian Institute of Political Science. *Tertiary Education in Australia.* A. & R., 1965.
Barcan, A. *A Short History of Education in New South Wales.* Martindale Press, 1965.
Bean, C.E.W. *Here, My Son.* A. & R. 1950.
Butts, R.F. *Assumptions Underlying Australian Education.* A.C.E.R., 1961.
Connell, W.F. *The Foundations of Secondary Education.* A.C.E.R., 1967.
Cramer, J.F. & Browne, G.S. *Contemporary Education.* Rev. ed., Harcourt Brace, 1965.
Fogarty, R. *Catholic Education in Australia, 1806-1950.* 2 vols. M.U.P., 1959.
Jackson, R.W.B. *Emergent Needs in Australian Education.* A.C.E.R., 1962.
Kandel, I.L. *Types of Administration.* A.C.E.R., 1938.
Karmel, P.H. *Some Economic Aspects of Education.* Cheshire, 1962.

EDUC901 AUSTRALIAN EDUCATION (CONT'D)

McKeown, P.J. & Hone, B.W. eds. *The Independent School.* O.U.P., 1967.
Melbourne Studies in Education. M.U.P. *(annually since 1957).*
Portus, G.V. *Free, Compulsory and Secular - A Critical Estimate of Australian Education.* O.U.P., 1937.
Report of the Committee on the Future of Tertiary Education in Australia (the Martin Report). Canberra, Government Printer, 1965.
Sanders, C. ed. *Technical Education for Development.* Western Australia U.P., 1966.
Wheelright E.L. ed. *Higher Education in Australia.* Cheshire, 1965.

Selected Journals:

The Australian Journal of Education. A.C.E.R.
The Australian University. Australian Vice-Chancellors' Committee.
The Forum of Education. Sydney Teachers' College.

EDUC902 EDUCATIONAL PRACTICE

An appreciation of guiding principles common to the teaching of secondary school children will be gained through study of preparation at course, topic and lesson levels and the utilization of school and community resources; aspects of classroom control and discipline; individual and group techniques of teaching; and evaluation procedures including the construction and administration of tests and examinations.

TEXTBOOKS

Gronlund, N.E. *Measurement and Evaluation in Teaching.* Macmillan, New York, 1976.
Hirst, P.H. & Peters, R.S. *The Logic of Education.* Routledge & Kegan Paul, London, 1972.
Musgrave, P.W. ed. *Contemporary Studies in the Curriculum.* Angus & Robertson, Sydney, 1974.

RECOMMENDED READING

Connell, W.F. ed. *The Foundations of Education.* Novak, 1962.
Connell, W.F. *The Foundations of Secondary Education.* Rev. ed. A.C.E.R., 1967.
Dunn, S.S. *Measurement and Evaluation in the Secondary School.* A.C.E.R., 1967.
Grambs, J.D. et.al. *Modern Methods in Secondary Education.* Rev. ed. Holt, Rinehart & Winston, 1958.
Knapp, T.R. *Statistics for Educational Measurement.* Intext, Scranton, N.Y., 1971.
Lindvall, C.M. *Measuring Pupil Achievement and Aptitude.* Harcourt, Brace & World, N.Y., 1967.
McIntosh, D.M., Walker, D.A. & Mackay, D. *The Scaling of Teachers' Marks and Estimates.* Oliver and Boyd, Edinburgh, 1971.
Schoenheimer, H.P. *Good Schools.* National Press, Melbourne, 1970.

EDUC903 EDUCATIONAL PSYCHOLOGY

A study of psychology as it bears on the educational process, through a treatment of learning, motivation and the development of adult modes of thinking. Although attention is paid to cognitive development throughout the school years, the cognition of the adolescent is especially considered.

TEXTBOOKS

de Lacey, P.R. *So many lessons to learn.* Penguin, Ringwood, Vic., 1974.
Hill, W.F. *Learning: a survey of psychological interpretations.* London, 1972.
Lefrancois, G.R. *Psychology for teaching.* Wadsworth, Belmont, Ca., 1975.
Muus, R.E. ed. *Adolescent Behaviour and Society.* Random House, New York, 1971.

RECOMMENDED READING

Ausubel, D.P. *The Psychology of Meaningful Verbal Learning.* Grune & Stratton, N.Y., 1963.
Ausubel, D.P. *School Learning.* Holt, N.Y., 1971.
Baller, W.R. & Charles, D.C. *The Psychology of Human Growth and Development.* Holt, N.Y., 1968.
Berlyne, D.E. *Structure and Direction of Thinking.* Wiley, N.Y., 1965.
Bernard, H.W. *Psychology of Learning and Teaching.* McGraw-Hill, N.Y., 1965.
Bruner, J.S. *The Process of Education.* Vintage Books, N.Y., 1961.
Elkind, D. & Flavell, J.H. eds. *Studies in Cognitive Development.* O.U.P. 1969.
Fantini, M.D. & Weinstein, G. *The Disadvantaged.* Harper & Row, N.Y., 1968.
Gordon, I.J. *Studying the Child in School.* Wiley, N.Y., 1966.
Hebb, D.O. *A Textbook of Psychology.* Chandler, San Francisco, 1966.
Kimbilly, J.D. ed. *Learning and the Educational Process.* Rand McNally, Chicago, 1965.
McCandles, B.R. *Children: Behaviour and Development.* Holt, N.Y., 1969.
McGinitie, W. & Ball, S. eds. *Readings in Psychological Foundations of Education.* McGraw-Hill, N.Y., 1968.
Messer, E.A. *Children, Psychology and the Teacher.* McGraw-Hill, London, 1967.
Smart, M.S. & Smart, R.C. *Children: Development and Relations.* Macmillan, N.Y., 1967.
Travers, R.M.W. *Essentials of Learning.* Macmillan, N.Y., 1967.
Vernon, P.E. *The Structure of Human Abilities.* Methuen, London, 1961.
Wattenberg, W.W. *The Adolescent Years.* Harcourt, Brace & World, N.Y., 1955.

EDUC903 EDUCATIONAL PSYCHOLOGY (CONT'D)

Selected Journals:

British Journal of Educational Psychology.
Education Research.
Harvard Education Review.

EDUC904 SOCIOLOGY OF EDUCATION

The aim of this course is to study all aspects of education within a sociological perspective. Models of society will be discussed as will the role of the school in society.

TEXTBOOKS

Boocock, S. *An introduction to the Sociology of Learning.* Houghton Mifflin, Boston, 1972.
Hargreaves, D.H. *Social Relations in a Secondary School.* Routledge & Kegan Paul, London, 1967.
Hargreaves, D.H. *Interpersonal Relations and Education.* Routledge & Kegan Paul, London, 1972.
Shephard, Jon M. *Kaleidoscope, Adapted Readings for Introductory Sociology.* Harper & Row, New York, 1973.

RECOMMENDED READING

Berger, P. *Invitation to Sociology. A Humanistic Perspective.* Doubleday Anchor, New York, 1963.
Clausen, John A. ed. *Socialization and Society.* Little Brown, Boston, 1968.
Cosin, B.R. et al. *School and Society: A Sociological Reader.* Routledge & Kegan Paul, London, 1971.
Dreitzel, H.P. *Recent Sociology.* Vols. 1 & 2, Macmillan, London, 1969.
Goffman, E. *The Presentation of the Self in Everyday Life.* Doubleday, New York, 1959.
Manis, J.F. & Meltzer, B.N. eds. *Symbolic Interaction. A Reader in Social Psychology.* 2nd ed. Allyn & Bacon, 1972.
Musgrave, P.W. *The Sociology of Education.* Methuen, London, 1965.
Pateman, T. *Counter Course. A Handbook for Course Criticism.* Penguin, 1972.
Rose, A. *Human Behaviour & Social Processes.* Houghton Mifflin, Boston, 1962.
Rose, P.I. ed. *The Study of Society.* Random House, N.Y., 1967.
Shipman, M.D. *The Sociology of the School.* Longmans, London, 1968.
Swift, D.F. *The Sociology of Education.* Routledge & Kegan Paul, London, 1969.
Swift, D.F. ed. *Basic Readings in the Sociology of Education.* Routledge & Kegan Paul, London, 1970.
Waller, W. *The Sociology of Teaching.* John Wiley & Son, New York, 1965.

Selected Journals:

American Sociological Review.
Australian and New Zealand Journal of Sociology.
British Journal of Sociology.
Sociology of Education. The American Sociological Assoc.

EDUC905 PHILOSOPHY IN EDUCATION

A study of the nature and scope of educational theory. By tracing the development of educational ideas in western culture, it is seen how the various disciplines of educational theory have emerged to cope with problems of value, knowledge and public education.

TEXTBOOK

Peters, R.S. *The Philosophy of Education.* O.U.P., London, 1973.

RECOMMENDED READING

Archambault, R.D. ed. *Philosophical Analysis and Education.* Routledge, 1966.
Brown, L.M. *General Philosophy in Education.* McGraw-Hill, 1966.
Brubacher, J.S. *A History of the Problems of Education.* 2nd ed. McGraw-Hill, 1966.
Buber, M. *Between Man and Man.* Fontana, 1961.
Connell, W.F. et al. *The Foundations of Education.* Novak, 1962.
Curtis, S.J. & Boultwood, M.E. *A Short History of Educational Ideas.* 4th ed. University Tutorial Press, 1965.
Dewey, J. *Democracy and Education.* Macmillan, 1916.
Dewey, J. *The Child and the Curriculum and The School and Society.* Phoenix Books, Chicago U.P., 1956.
Jeffreys, M.V.C. *Glaucon.* Pitman, 1955.
Maritain, J. *Education at the Crossroads.* Yale U.P., 1961.
Morrish, I. *Disciplines of Education.* Allen & Unwin, 1967.
Nash, P. et al. eds. *The Educated Man.* Wiley, 1965.
N.S.S.E. 54th Yearbook. *Modern Philosophies and Education.* Chicago U.P., 1955.
Niblett, W.R. ed. *Moral Education in a Changing Society.* Faber, 1963.
Peters, R.S. *Ethics and Education.* Allen & Unwin, 1966.
Price, K. *Education and Philosophic Thought.* Allyn & Bacon, 1962.

EDUC905 PHILOSOPHY IN EDUCATION (CONT'D)

Reid, L.A. *Philosophy and Education.* Heinemann, 1962.
Rusk, R.R. *The Doctrines of Great Educators.* 2nd ed. Macmillan, 1954.
Ullich, R.H. *History of Educational Thought.* American Book Co., 1945.
Wynne, J.P. *Theories of Education.* Harper, 1963.

Selected Journals:

Educational Theory. University of Illinois.
Educational Philosophy and Theory. Univ. of N.S.W.
Harvard Educational Review. Harvard University.

EDUC916 EDUCATION SEMINARS

Details will be provided by the Department of Education.

EDUC921 ECONOMICS AND COMMERCE METHOD

The aim is to develop competent and critical teachers of economics and commerce. These subjects are discussed in relation to a general theory of education, problems of programming, lesson preparation and presentation.

RECOMMENDED READING

Combs, Arthur W. *The Professional Education of Teachers.* Allyn & Bacon, Inc., 1970.
Edwards, et al. *The Teaching of Economics.*
Fenton, E. *Teaching the New Social Studies in Secondary Schools.* Holt, Rinehart & Winston, 1967.
Lumsden, Keith, G. ed. *New Developments in the Teaching of Economics.* Prentice-Hall, 1967.
Oliver, J.M. *The Principles of Teaching Economics.* Heinemann Education Books Ltd., 1973.

Selected Journals:

American Economic Review. American Economic Association.
Economica. London School of Economics.
The Economic Record. The Economic Society of Australia and New Zealand.

EDUC922 ENGLISH METHOD

This course deals with the aspects of language, expression and literature that concern the teacher in the secondary school. Language work examines contemporary theories and practice and the changing nature of linguistic studies. Expression themes include the fostering of responsive writing and aims and methods in oral practice. In the examination of literature the need is stressed to foster enjoyment and understanding at various levels. Some attention is given to testing, the programming of work and the interpretation of curricula.

RECOMMENDED READING

Goldstein, M.B. *The Teaching of Language in Our Schools.* Macmillan, 1966.
Hoffman, C.H. *Speech in the Australian Classroom.* Ure Smith, 1964.
Holbrook, D. *English for the Rejected.* Cambridge U.P., 1964.
Holbrook, D. *The Secret Places.* Methuen, 1965.
Schoenheimer, H.R. *Education Through English.* Cheshire, 1967.
Walsh, J.H. *Teaching English.* Heinemann, 1965.
Whitehead, F.W. *The Disappearing Dais.* Chatto & Windus, 1966.

Selected Journals:

English in Australia. Australian Association for the Teaching of English, Melbourne.
The Teaching of English. English Teachers' Association of N.S.W.

EDUC923 GEOGRAPHY METHOD

A survey of the principles and problems underlying the selection, organization and presentation of geographical knowledge. Topics include: the place of geography in the secondary school, the nature and organization of programmes, the inter-relationship of systematic and regional geography, and specific aspects of classroom practice and field studies.

RECOMMENDED READING

Biddle, D.S. ed. *Readings in Geographical Education.* Vol. 1. Whitcombe & Tombs, Sydney, 1968.
Biddle, D.S. & Deer, C.E. eds. *Readings in Geographical Education.* Vol. II. Whitcombe & Tombs, Sydney, 1973.
Chorley, R.J. & Hagget, P. eds. *Frontiers in Geographical Teaching.* Methuen, London, 1965.
Graves, N. ed. *New Movements in the Study and Teaching of Geography.* Cheshire, Melbourne, 1972.
Long, M. & Robinson, B.S. *Teaching Geography.* Heinemann Educational Books, London, 1966.
Walford, R. ed. *New Directions in Geography Teaching.* Longman, London, 1973.

EDUC923 GEOGRAPHY METHOD (CONT'D)

Selected Journals:

Australian Geographer. Geographical Society of N.S.W.
Geography. Geographical Association, London.
Journal for Geography. National Council for Geographic Education, Chicago.

EDUC924 HISTORY METHOD

Students are introduced to the theory and practice of the teaching of history at the secondary school level through a study of the principles and problems underlying the selection, organization and presentation of historical information. Topics include the nature of history; the purposes behind its teaching; programming; practical aspects of classroom work.

RECOMMENDED READING

Carr, E.H. *What is History?* Pelican, 1961.
Dance, E.H. *The Place of History in Secondary Teaching.* Harrap, 1970.
Dufty, D.G. *Teaching About Society.* Rigby, 1970.
Elton, G.R. *The Practice of History.* S.U.P., 1967.
Hancock, W.K. *Attempting History.* A.N.U., 1969.
Stretton, H. *The Political Sciences.* Routledge & Kegan Paul, 1969.
Thompson, D. *The Aims of History.* Thames & Hudson, 1969.
Walshe, R. & Little, N. eds. *Ways We Teach History.* History Teachers' Association, Sydney, 1970.

Selected Journals:

English-History Bulletin. N.S.W. Department of Education.
Teaching History. Journal of the N.S.W. History Teachers' Association.
Teaching Method Bulletin. N.S.W. History Teachers' Association.

EDUC925 MATHEMATICS I METHOD
EDUC935 MATHEMATICS II METHOD

Mathematics First Method seeks to develop in students an awareness of various methods possible in secondary school. Emphasis is placed on the development of concepts, use of discovery and grading of material. Aims for different age and ability groups are related to these. Students doing another subject method as well will take this course.

Mathematics Second Method deals with a selection of these topics from an advanced standpoint, and is for students taking mathematics as a double method.

RECOMMENDED READING

Courant, R. & Robbins, H. *What is Mathematics?* 4th ed. O.U.P., 1961.
Coxeter. *Introduction to Geometry.* Wiley, 1963.
Howson, A.G. ed. *School Mathematics Project.* C.U.P., 1965.
Kline, M. *Mathematics: A Cultural Approach.* Addison-Wesley, 1962.
National Council of Teachers of Mathematics. *Computer-orientated Mathematics.* 1965.
Oalsley, C.O. & Allendoerfer, C.B. *Principles of Mathematics.* McGraw-Hill, 1955.
Reeve. *Mathematics for the Secondary School.* Holt, Rinehart & Winston, 1960.
Schaaf, W.L. *Mathematics for Everyday Use.* Barnes & Noble, 1958.

Selected Journals:

Australian Mathematics Teacher.
Mathematics Teacher. National Council of Teachers of Mathematics.
N.S.W. Department of Education Mathematics Bulletin.

EDUC926 SCIENCE I METHOD
EDUC936 SCIENCE II METHOD

Science First Method seeks to prepare graduates to teach at all high school levels in the areas of physics and chemistry. It is also concerned with science curricula, teaching aids, records and assessment, teaching procedures and safety precautions.

Science Second Method seeks to prepare graduates to teach biology and geology at all high school levels. It has a method component that is specially concerned with the aims and philosophy of science teaching.

Science First Method is to be preferred if the student takes only one science method.

EDUC926 SCIENCE I METHOD (CONT'D)
EDUC936 SCIENCE II METHOD (CONT'D)

RECOMMENDED READING

A Biology Course for Teachers. Correspondence course prepared in the School of Biological Sciences, University of Sydney.
Dictionary of Geological Terms. Dolphin Reference Book, 1962.
Heller, R.L. ed. *Geology and Earth Science Sourcebook for Elementary and Secondary Schools.* American Geological Institute.
McDonald, Massey & Tebbutt. *Enquiring into the Earth.*
Meyer, G.R. ed. *Field Excursions in Biology for Fifth and Sixth Forms.* Dept. Education, N.S.W., In-Service Training Branch, 1965.
Moody, P.A. *Introduction to Evolution.* Harper & Row, 1962.
Notes on Biology - Forms V and VI. Dept. Education, N.S.W., In-service Training Branch.
Nuclear Research Foundation. *Science for High School Students.* N.S.W. Government Printer, Sydney, 1964.
Nuclear Research Foundation. *Science for High School Students - a Teacher's Manual.* N.S.W. Government Printer, Sydney, 1964.
Nuclear Research Foundation. *Senior Science for High School Students.* Parts 1-3. N.S.W. Government Printer, Sydney, 1966.
Parry & Steiner. *Chemistry: Experimental Foundations.* 1970.
Parry & Steiner. *Chemistry: Experimental Foundations.* Teachers Guide.
Parry & Steiner. *Chemistry: Experimental Foundations.* Laboratory Manual.
Sinnotl, E.W., Dunn, L.C. & Dobzhansky, T. *Principles of Genetics.* McGraw-Hill, 1958.
UNESCO. *Sourcebook for Science Teaching.* UNESCO, 1962.
Villee-Dethler. *Biological Principles and Processes.* W.B. Saunders, 1971.

Selected Journals:

Australian Science Teachers' Journal. Australian Science Teachers' Association.
Science Education News. Science Teachers' Association of N.S.W.

SELECTED TOPICS

The selected topics are of two kinds: professional skills and academic electives.

EDUC912 PHYSICAL EDUCATION

The aim is to encourage personal physical fitness in the Diploma student, as well as to prepare him for the duties in this area that fall to the general teacher.

EDUC911 HEALTH EDUCATION

Students are given guidance concerning physical and mental health, and informed of resources available in the schools.

EDUC910 COMMUNICATION SKILLS

Students are made more aware of problems of communication in the classroom, and their own personal competence is improved.

EDUC914 ELECTIVES

Lectures and tutorials are offered in a variety of electives designed to provide opportunity for students to pursue some studies at greater depth. While the composition of the student group from year to year will partly determine which electives are offered, it is intended to provide a range representative of the main disciplines of education. Students are expected to choose electives that enable them to draw in some way on their previous studies.

SUPERVISED TEACHING PRACTICE

EDUC915 TEACHING PRACTICE

Students engage in the equivalent of eight weeks full-time teaching practice in schools. They are expected to plan learning units, observe and take individual lessons, develop classroom routines and controls, test and evaluate pupil learnings, and become acquainted with the general school duties of a teacher. As the practice situation is meant to be the application in the field of principles studied and informal subjects already described, a detailed reference list is not appropriate, but a specific orientation to Teaching Practice is provided by the following books.

EDUC915 TEACHING PRACTICE (CONT'D)

RECOMMENDED READING

Cohen, A. & Garner, N.A. *A Student's Guide to Teaching Practice.* L.U.P., 1963.
Devor, J.W. *The Experience of Student Teaching.* Macmillan, 1964.
Student Teaching in Secondary Schools. 4th ed. McGraw-Hill, 1964.

BACHELOR OF EDUCATION

1. The degree of Bachelor of Education may be conferred by the Council on the recommendation of the Academic Senate on a candidate who has with the approval of Academic Senate satisfactorily completed courses of study to the value of 48 credit points and who has satisfied other requirements specified for the award of the degree.

2. An application to register as a candidate for the degree of Bachelor of Education shall be made on the prescribed form which shall be lodged with the Registrar at least one full calendar month before the commencement of the session in which the candidate intends to register.

3. The candidate for registration for the degree of Bachelor of Education shall have qualified for

   (a) a degree of bachelor in the University or a degree from another institution approved by the Academic Senate; and

   (b) the Diploma in Education in the University or an equivalent qualification approved by the Academic Senate.

4. In appropriate circumstances, a person may be permitted to register as a candidate for the degree if he submits evidence of such academic and professional attainments as may be approved by the Academic Senate.

5. Notwithstanding any other provisions of these conditions the Academic Senate may require an applicant to demonstrate fitness for candidature by carrying out such work and sitting for such examinations as it may determine.

6. An approved candidate shall register with the University in one of the following categories:

   (a) a student undertaking full-time study; or

   (b) a student undertaking part-time study.

7. No candidate shall, without the approval of the Academic Senate, be enrolled at the same time in any other degree or diploma in the University or elsewhere.

8. A candidate who is undertaking full-time study will normally be examined after 2 academic sessions but shall not be allowed to proceed with the degree if the requirements have not been fulfilled after registration for 4 academic sessions. A candidate who is undertaking part-time study normally shall not be allowed to proceed if the requirements for the degree have not been fulfilled after registration for 8 academic sessions. In exceptional cases an extension of these times may be granted by the Academic Senate.

9. The maximum period for a candidate to re-apply after discontinuation shall be determined by the Academic Senate.

10. A candidate shall be required to pay such charges as may be determined from time to time by Council.

11. In satisfying the requirements for the degree the candidate shall complete subjects to the value of 16 credit points from Section 1 and subjects to the value of 32 credit points from Section 2 of the Schedule of Subjects for the Bachelor of Education degree (Department of Education).

12. A candidate may not include in this degree programme any subject which the candidate has previously taken and had credited towards a qualification accepted for admission under Section 3 of these requirements.

EDUC939 EDUCATIONAL RESEARCH METHODOLOGY AND DESIGN

4 hrs per week: lectures, seminars & tutorials
Assessment: Formal examinations, test, assignments and associated projects (if appropriate)

The logic of educational research.
Descriptive techniques.
Inferential techniques.
Sampling problems.
Validity of experiments in social settings.
Statistical and scientific hypotheses.

EDUC939 EDUCATIONAL RESEARCH METHODOLOGY AND DESIGN (CONT'D)

Quasi-experimental designs.
Generalizations and predictions.
Applications of research to the classroom.
Applications of research to education.

TEXTBOOK

Gephart, W.J. & Ingle, R.B. *Educational Research.* Merrill, Columbus, Ohio, 1969.

EDUC940 EDUCATIONAL PSYCHOLOGY TOPIC A

3 hrs per week: lectures, seminars & tutorials
Assessment: Formal examinations, test, assignments and associated projects (if appropriate)

Language in early childhood.
Language in the school.
Continuity and discontinuity in development Tests of conceptual and language development.
Special topic.

TEXTBOOKS

Birch, H.G. & Gussow, J.D. *Disadvantaged Children.* Grune and Stratton, London, 1970.
Rubin, D. *Teaching elementary language arts.* Holt, Rinehart and Winston, New York, 1975.
Sattler, J.M. *Assessment of children's intelligence.* Saunders, Philadelphia, 1974.
Seaborne, P.C. *An introduction to the Dienes Mathematics programme.* University of London Press, London, 1975.

EDUC941 EDUCATIONAL PSYCHOLOGY TOPIC B

3 hrs per week: lectures, seminars & tutorials
Assessment: Formal examinations, test, assignments and associated projects (if appropriate)

Social class and intelligence.
Ethnic differences and mental growth.
Compensatory education.
Literacy and numeracy programmes.
Special topic.

TEXTBOOKS

As for EDUC940.

EDUC942 EDUCATIONAL SOCIOLOGY TOPIC A

3 hrs per week: lectures, seminars & tutorials
Assessment: Formal examinations, test, assignments and associated projects (if appropriate)

The family and education.
Social class and education.
The economy and education.

TEXTBOOKS

Edgar, D.E. ed. *Sociology of Australian education.* McGraw-Hill, Sydney, 1975.
Musgrave, P.W. *Sociology of education.* Methuen, London, 1965.

EDUC943 EDUCATIONAL SOCIOLOGY TOPIC B

3 hrs per week: lectures, seminars & tutorials
Assessment: Formal examinations, test, assignments and associated projects (if appropriate)

The political functions of education.
The use of education for selection.
Implications of teaching becoming a profession.
The roles of the teacher.

TEXTBOOKS

As for EDUC942.

EDUC944 COMPARATIVE EDUCATION AND HISTORY OF EDUCATION

3 hrs per week: lectures, seminars & tutorials
Assessment: Formal examinations, test, assignments and associated projects (if appropriate)

Systematic study of educational systems selected from Australia, U.S.A., U.K., France, Japan, S.E. Asia and China.
Selected case study analyses showing the problem and inductive approaches in comparative methodology.
Interdisciplinary contributions to Comparative Education.
The Australian context.
Historical antecedents to formal education systems in selected countries.

TEXTBOOKS

Yearbooks of Education, 1948-1975. Evans Bros, London.
Ullich, R. *Three thousand years of educational wisdom.* New York, 1973.

EDUC945 PHILOSOPHY OF EDUCATION AND THEORIES OF EDUCATION

3 hrs per week: lectures, seminars & tutorials
Assessment: Formal examinations, test, assignments and associated projects (if appropriate)

Impact of philosophers on education.
Application of philosophical methods of enquiry to education.
Social philosophies and their impact on education.
Survey of major educational theories and theorists.
Mass compulsory education in post-industrial society.

TEXTBOOKS

As for EDUC944.

EDUC946 INTRODUCTION TO EDUCATIONAL RESEARCH METHODOLOGY

3 hrs per week: lectures and seminars
Assessment: Examination and assignments

Principles of Educational Research.
Descriptive Techniques.
Inferential Techniques.
Problem Identification.
Design and Analysis.
Interpretation of Findings.

TEXTBOOK

Gephart, W.J. & Ingle, R.B. *Educational Research.* Merrill, Columbus, Ohio, 1969.

EDUC947 INTRODUCTION TO CURRICULUM THEORY AND DEVELOPMENT

3 hrs per week
Assessment: Examinations and assignments.

Origins of the Curriculum in Public School systems.
Curriculum theories of (a) Gwyn and Chase (b) Hirst and Peters (c) Saylor and Alexander (d) Contemporary Australian Theorists.
The socio-philosophical bases of the curriculum.
General methods of developing, implementing, and evaluating curriculum at the school and classroom level.

TEXTBOOKS

Gwyn, J. & Chase, J. *Curriculum Principles and Social Change.* Macmillan, London, 1970.
Kemp, J. *Instructional Design.* Fearon Press, Palo Alto, Calif., 1973.
Musgrave, P.W. ed. *Contemporary Studies in the Curriculum.* Angus and Robertson, Sydney, 1974.

EDUC948 SCHOOL ADMINISTRATION

3 hrs per week: lectures & seminars
Assessment: Assignments and project

Organisation for Instruction.
Grouping Procedures.

EDUC948 SCHOOL ADMINISTRATION (CONT'D)

The Leadership Function.
Role Expectations.
Characteristics of Organisation.
Informal Organisation.

TEXTBOOKS

Gorton, R.A. *Conflict, Controversy and Crises in School Administration and Supervision.* William Brown, Dubuque, Iowa, 1972.
Musgrave and Selleck. *Alternative Schools.* Wiley, Sydney, 1975.
Sergiovanni, T.J. & Starratt, R.J. *Emerging Patterns of Supervision.* McGraw-Hill, 1971.

EDUC949 DYNAMICS OF CLASSROOM INTERACTION

3 hrs per week: lectures & seminars
Assessment: Examinations and assignments

Examination of social and institutional pressures affecting the behaviour of individuals in an educational setting.
The notions of deviance and adjustment.
Institutional socialization.
Consensus and conflict.

TEXTBOOKS

Kinch, J.W. ed. *Sociology in the World Today.* Addison-Wesley, Reading, Mass., 1971.
Westby-Gibson, D. ed. *Education in a Dynamic Society: A Contemporary Source Book.* Addison-Wesley, Reading, Mass., 1972.

EDUC950 DEVELOPMENTAL THEORIES AND SCHOOL EDUCATIONAL PRACTICE

3 hrs per week: lectures & seminars
Assessment: Examination and assignments

A treatment of a selection of developmental theories in relation to formal and informal educational principles.

TEXTBOOKS

Aronfreed, J. et al. *Developmental Psychology Today.* C.R.M. Books, Del Mar, Col., 1971.
Sprinthall, R.C. & Sprinthall, N.A. *Educational Psychology: a developmental approach.* Addison-Wesley, Reading, Mass., 1974.

EDUC951 SPECIAL TOPIC IN EDUCATION A

3 hrs per week: tutorials and seminars
Pre-requisite: Demonstrated expertise in a special area of Educational Practice as determined by the Chairman of the Department
Assessment: Project

The special subject topics in Education exist to enable advanced study to be undertaken by practitioners who have already reached an advanced level of performance in the area concerned.

Syllabus will be designed on an individual basis.

EDUC952 SPECIAL TOPIC IN EDUCATION B

3 hrs per week: tutorials and seminars
Pre-requisite: Demonstrated expertise in a special area of Educational Practice as determined by the Chairman of the Department
Assessment: Project

The special subject topics in Education exist to enable advanced study to be undertaken by practitioners who have already reached an advanced level of performance in the area concerned.

Syllabus will be designed on an individual basis.

MASTER OF EDUCATION

The degree of Master of Education (MEd) in the Department of Education shall be subject to the University's requirements for the award of the degree of Master together with the following conditions:

1. Entry to the degree programme will normally be available to a person who has:
   (a) Completed the requirements for the University's Bachelor of Education degree with the results averaging credit level or better;
   (b) completed qualifications deemed by the Academic Senate to be the equivalent of the University's Bachelor of Education degree with results averaging credit level or better;
   (c) completed the requirements for an approved Bachelor's degree with Honours and who holds an approved teaching qualification; or
   (d) completed such other qualifications as might be approved by the Academic Senate on the recommendation of the Departmental Chairman provided that in view of the Academic Senate any such person shall have accumulated the equivalent of 48 credit points beyond a Pass degree.

2. The degree programme will normally be completed in two sessions of full-time study or four sessions of part-time study.

3. The degree programme shall involve:
   (a) Satisfactory completion of a project whose credit point value is 8 together with the satisfactory completion of graduate subjects chosen from the Schedule of Subjects for the Master of Education degree (Department of Education) to the value of 40 credit points; or
   (b) satisfactory completion of a project whose credit point value is 16 together with satisfactory completion of graduate subjects chosen from the Schedule of Subjects for the Master of Education degree (Department of Education) to the value of 32 credit points; or
   (c) a minor thesis embodying the results of an investigation whose credit point value is 24 together with satisfactory completion of graduate subjects chosen from the Schedule of Subjects for the Master of Education degree (Department of Education) to the value of 24 credit points; or
   (d) a thesis embodying the results of an investigation to the value of 48 credit points.

4. A candidate may not include in this degree programme any subject which the candidate has previously taken and had credited towards a qualification accepted for admission under Section 1 of these requirements.

5. Each candidate for the degree programme in 3.1(a) or 3.1(b) shall be assigned a supervisor by the Chairman of the Department of Education. Where a candidate has enrolled in a degree programme that includes either a thesis or a minor thesis the Academic Senate shall appoint a supervisor on the recommendation of the Chairman of the Department of Education.

6. A project completed in satisfaction of 3.1(a) or 3.1(b) shall be assessed by two examiners appointed by the Chairman of the Department of Education.

EDUC953 EDUCATIONAL PSYCHOLOGY A

Double session subject
3 hrs per week: lectures and seminars
Assessment: Examination and assignments

An intensive study of contemporary issues in learning in a formal educational context. Opportunity will be provided for students to specialise in early and middle childhood learning or learning of adolescents.

TEXTBOOKS

Although a text will be arranged, wide recourse will be made to the literature available at the commencement of the course.

EDUC954 EDUCATIONAL PSYCHOLOGY B

Double session subject
3 hrs per week: lectures and seminars
Assessment: Examination and assignments

This course offers a detailed enquiry into theories of motivation and achievement motivation.

TEXTBOOKS

Although a text will be arranged, wide recourse will be made to the literature available at the commencement of the course.

EDUC955 CURRICULUM STUDIES A

Double session subject
3 hrs per week: lectures and seminars
Assessment: Examination and assignments

(a) Survey of the origins of the curriculum in public school systems - historical, political, economic, and philosophical antecedents to the development of the modern public school curriculum.

(b) Methods of designing curricula for a variety of educational environments and socio-political philosophies.

(c) Curriculum construction, implementation, and evaluation at the local school level.

(d) Transitional concepts of curriculum development in relation to the contemporary relocation in the locus of control over educational outcomes.

TEXTBOOKS

None specified: students will draw from an extensive bibliography of selected primary and secondary literature.

EDUC956 CURRICULUM STUDIES B

Double session subject
3 hrs per week: lectures and seminars
Assessment: Examination and assignments

(a) Advanced topics in curriculum theory, planning and instructional design.

(b) Humanistic, pragmatic, and rationalistic approaches to curriculum theory.

(c) The 'systems' approach to curriculum planning and instructional design.

(d) Selected topics from (i) curriculum development for primary schools, (ii) curriculum development for secondary schools, (iii) for senior secondary schools, (iv) for higher educational programmes.

TEXTBOOKS

None specified: students will draw from an extensive bibliography of selected primary and secondary literature.

EDUC957 EDUCATIONAL ADMINISTRATION AND ORGANISATION A

Double session subject
3 hrs per week: lectures and seminars
Assessment: Examination and assignments

Structure and processes in organisation.
Bureaucracy in Education.
Policy-making.
Educational leadership in a changing society.

TEXTBOOKS

Baron, G. & Taylor, W. *Educational administration and the Social Sciences.* Athlone Press, London, 1969.
Thomas, A.R., Farquhar, R.H. & Taylor, W. eds. *Educational administration in Australia and abroad.* University of Queensland Press, St. Lucia, 1975.

EDUC958 EDUCATIONAL ADMINISTRATION AND ORGANISATION B

Double session subject
3 hrs per week: lectures and seminars
Assessment: Examination and assignments

Assessment and accountability of teachers.
Role theory and educational administration.
The economics and administration of education.
The politics of educational administration.

TEXTBOOKS

As for EDUC957.

EDUC959 EDUCATIONAL RESEARCH AND DESIGN OF EXPERIMENTS

Double session subject
3 hrs per week: lectures and seminars
Assessment: Examination and assignments

This subject is strongly recommended for each MEd candidate unless otherwise recommended by supervisor. Experimental and Quasi-experimental designs for Research; Planning Research; Sampling; Interviewing; Questionnaires; Data Processing; Personality Assessing; Attitude Measurement; Observation and Case Studies; Interpreting Results; Report Writing.

TEXTBOOKS

Campbell, D.T. & Stanley, J.C. *Experimental and Quasi-Experimental Designs for Research.* Rand McNally, Chicago, 1966.
Gephart, W.J. & Ingle, R.B. *Educational Research Selected Readings.* Merrill, Columbus, Ohio, 1969.
Nisbet, J.D. *Educational Research Methods.* University of London Press, London, 1970.

EDUC960 SPECIAL TOPIC IN EDUCATION A

Double session subject
3 hrs per week: tutorials and seminars
Pre-requisite: Demonstrated expertise in an area of educational practice or theory
Assessment: Project

The special subject topics in Education exist to enable advanced study to be undertaken by practitioners who have already reached an advanced level of performance in the area concerned.

EDUC961 SPECIAL TOPIC IN EDUCATION B

Double session subject
3 hrs per week: tutorials and seminars
Pre-requisite: Demonstrated expertise in an area of educational practice or theory
Assessment: Project

The special subject topics in Education exist to enable advanced study to be undertaken by practitioners who have already reached an advanced level of performance in the area concerned.

ELECTRICAL ENGINEERING

MASTER OF ENGINEERING

Under the Requirements for the degree of Master of Engineering, candidates may meet the major requirements by satisfactorily completing:

(a) a thesis embodying the results of an investigation; or

(b) a study comprising formal course work; or

(c) study comprising formal course work and a minor thesis.

(No new candidates for the degree of Master Engineering Science will be accepted; so graduates wishing to undertake additional formal studies in electrical engineering will now be able to do so by following one of the three prescriptions (a), (b) or (c) above.)

The majority of engineering graduates seeking entry to the Masters programme will have qualifications which fall within one of four main categories, namely:

(i) A nominal 6 year, part time pass degree e.g. BSc (Eng).

(ii) A nominal 4 year, full time pass degree e.g. BE.

(iii) A nominal 6 year, part time degree with Merit.

(iv) A nominal full time, 4 year degree with Honours.

Those in categories (iii) and (iv) qualify for entry under Section 5 of the Conditions for the Award of the Degree of Master, while those in sections (i) and (ii) must seek entry under Section 6.

ENTRY UNDER SECTION 5 - GRADUATES WITH HONOURS DEGREE

Under Section 5 of the Conditions, candidates must accumulate a total of not less than 48 credit points by the successful completion of subjects from the Schedule of Graduate Subjects, which are described below.

ENTRY UNDER SECTION 6 - GRADUATES WITH PASS DEGREE

Under Section 6 of the Conditions, candidates are required to accumulate 96 credit points of which at least 48 points shall be from subjects included in the Schedule of Graduate Subjects; the remaining 48 credit points however need not be for subjects at the Postgraduate level. Graduates in category (i) above could take a selection of 400-level subjects from Schedule C of the Bachelor Degree Requirements. However, it is expected that Graduates in categories (i) and (ii) will enrol in ELEC999 ADVANCED TOPICS IN ENGINEERING.

In any year a restricted range of topics only will be offered, both in ELEC999 and from other Postgraduate subjects, so graduates intending to enrol should arrange to discuss their desired programme with the Department as soon as possible in order to ensure that an appropriate selection of topics will be offered. Formal Postgraduate lectures normally begin at the end of March.

Subject to the approval of the Departmental Chairman and the Graduate Studies Committee, courses offered by other Departments will be acceptable for the Masters Course in Electrical Engineering.

DETAILS OF SUBJECTS

There are no exclusions, pre-requisites or co-requisites within the subjects offered.

Unless otherwise stated each subject comprises 56 hours of lectures and tutorials, is worth six credit points and may be offered in the first or second session or throughout the year.

There are no set textbooks or recommended reading but each year reading lists will be set from the published literature.

ELEC901 COMPUTER AIDED ANALYSIS AND DESIGN

Analysis and design of electronic networks using digital computers. Advanced techniques, including state-space methods, modelling and optimisation. Development of automatic routines for batch, remote and on-line processing.

ELEC911 RELIABILITY ENGINEERING

Methods of analysis, modelling, probabilistic system analysis and design. Redundant systems, computer techniques and reliability optimisation. Fault identification techniques.

ELEC921 MATRIX ANALYSIS OF ELECTRICAL MACHINES

Derivation of mathematical models, properties and applications of transformations, solution methods; non-ideal machines.

ELEC922 MACHINES IN CONTROL SYSTEMS

Stability and transient performance, heating and ratings, simplified models, converter-fed a.c. and d.c. machines as control system elements.

ELEC923 STATIC CONVERTERS

Properties, protection and control of high power solid state switching elements. Characteristics of rectifiers, inverters, pulse and cycloconverters and their application to a.c. and d.c. variable speed drives.

ELEC924 ADVANCED POWER SYSTEMS

An advanced course on industrial and high voltage power systems dealing with load flow, faults, stability, transients, insulation co-ordination, economic evaluations and application of computers.

ELEC931 CONTROL COMPUTING

Digital, analogue and hybrid computational methods for the solution of engineering problems. On-line control, microprocessors, and operation of hybrid computers. Computer interfacing techniques.

ELEC941 CONTROL SYSTEM ANALYSIS AND DESIGN

A unified approach using "classical" and "modern" methods to treat the control problems of identification, representation and solution, stability, design and optimisation.

ELEC942 OPTIMAL CONTROL SYSTEMS

Problem formulation and methods of solution including advanced optimisation techniques, variational, dynamic programming and Pontryagin's Maximum Principle.

ELEC943 NONLINEAR CONTROL SYSTEMS

Analysis of nonlinear control systems including numerical, series approximation, graphical and describing function methods. Stability investigation using Lyapunov's methods and extensions, and functional methods.

ELEC944 SAMPLED-DATA CONTROL SYSTEMS

Topics related to the use of digital equipment in control systems. Analysis and synthesis of control systems using sampling techniques.

ELEC961 NOISE AND INFORMATION THEORY

Principles of coding, channel capacity, redundancy; application of information theory to engineering systems.

ELEC962 ELECTROMAGNETIC FIELDS AND ANTENNAS

Analysis of biconical and cylindrical antennas, aperture radiating systems. Obstacles and mounts in waveguides, numerical methods for solution of field problems.

ELEC963 MICROWAVE DEVICES AND ELECTRONICS

Scattering matrix analysis; structures and mounts; transistor amplifiers; parametric amplifiers; Impatt and Gunn devices; electron beam devices.

ELEC971 HIGH VOLTAGE PROPERTIES OF MATERIALS

Electrical conduction and breakdown in gases, liquids and solids. Advanced application of ionised gases. Generation and measurement of high voltages and non-destructive dielectric test techniques.

ELEC972 AIR POLLUTION CONTROL TECHNIQUES

Surface, dynamic, optical and adhesive properties of particulates, effects of particulates and gases on air quality, basic theory of particulate collection using electrostatic, inertial and gravitational forces, filtration and measurement methods.

ELEC981 MATHEMATICAL METHODS IN ELECTRICAL ENGINEERING 1

Transform methods applied to analysis and synthesis problems arising in electrical engineering, properties and applications of Fourier, Laplace and Z transforms.

ELEC982 MATHEMATICAL METHODS IN ELECTRICAL ENGINEERING 2

Time domain methods applied to analysis and synthesis problems arising in electrical engineering, state variable methods, linear and nonlinear systems, input-output and convolution.

ELEC951 THESIS

48 credit points

ELEC952 THESIS

24 credit points

ELEC953 REPORT

12 credit points

ELEC999 ADVANCED TOPICS IN ENGINEERING

Double session subject, 48 credit points
12 hrs per week, including 2 seminar hrs and some project work
Assessment: Formal examinations, tests, assignments and associated (if any) experimental work

Students will normally take a selection of topics at advanced level. The selection of the topics will be subject to the approval of the Chairman of the Department in which the student wishes to enrol and subsequently specialise.

The subject may include topics from:

Air, noise and water pollution
Air pollution control techniques
Anisotropic elasticity
Analog and digital filters
Antennas
Boiling heat transfer
Boundary layer theory
Computer aided analysis and design
Computer methods
Conformal mapping
Control computing
Economic & social evaluation of engineering projects
Electrical properties of materials
Energy from the environment
Field theory
Finite element techniques
Heat and mass transfer
Microscopic thermodynamics
Microwave electronics
Modern control systems theory
Noise and information theory
Numerical techniques
Power system and analysis and design
Process control
Propagation
Refrigeration and air conditioning

ELEC999 ADVANCED TOPICS IN ENGINEERING(CONT'D)

Signal processing
Simulation
Static converters
Structural dynamics
Structural topology
Transient performance of machines
Variational methods

GEOGRAPHY

MASTER OF ARTS BY COURSE WORK

INTRODUCTION

There is an increasing need in the community for graduates in Geography with more advanced and extensive knowledge of the discipline than is commonly attained by the 3 year pass degree holder. Such a need is not always most appropriately satisfied by requiring graduates to embark on the fourth year Honours programme with its heavy research component. Accordingly, the Department of Geography offers a programme of post-graduate level courses which leads to the degree of M.A. in Geography. Such qualifications will be of particular use to geographers engaged in Education or employed in other areas such as the various branches of the Public Service, in Local Government or in Planning Consultancies where an up to date knowledge of urban, social and environmental matters is imperative.

STRUCTURE

Students entering the programme with a pass degree in Geography or some other appropriate discipline (Category A) will be required to complete subjects with a value of at least 96 credit points. Those with an Honours degree or its equivalent (Category B) will be required to complete subjects with a minimum value of 48 credit points.

CATEGORY A

Students are required to take their first 48 credit points from the following subjects.

GEOG901	Issues in the Philosophy and Methodology of Geography	(12 cr. pts.)
GEOG902	Special seminar in Geography	(12 cr. pts.)

plus either 24 credit points from 300- or 400-level courses (in Geography or a cognate field approved by the Departmental Chairman) not previously included in a degree programme, enhanced by more extensive reading and writing assignments, *or* GEOG903 Special Project in Geography (24 cr. pts.).

CATEGORY B

Category B students and Category A students who have successfully completed the first 48 credit points of the programme will select their subjects from the following.

GEOG907	Advanced Topics in Economic Geography	(12 cr. pts.)
GEOG908	Advanced Topics in Social Geography	(12 cr. pts.)
GEOG909	Advanced Topics in Urban Geography	(12 cr. pts.)
GEOG911	Advanced Topics in Fluvial Geomorphology	(12 cr. pts.)
GEOG912	Advanced Topics in Coastal Geomorphology	(12 cr. pts.)
GEOG913	Advanced Topics in Environmental Management	(12 cr. pts.)
GEOG921	Research Report in Geography A	(12 cr. pts.)
GEOG922	Research Report in Geography B	(12 cr. pts.)
GEOG923	Minor Thesis in Geography	(24 cr. pts.)

but *must* include at least one of the subjects GEOG921, 922, 923.

ENTRY TO COURSE

Entry to the course will be dependent upon approval by the Departmental Chairman.

PROGRAMME DETERMINATION

Students wishing to enrol for this programme must have their proposed course of study approved by the Departmental Chairman.

GEOG901 ISSUES IN THE PHILOSOPHY AND METHODOLOGY OF GEOGRAPHY

Contact hrs per week: 4 hrs
Assessment: Essays, seminar papers, examination

Changing view on the nature of Geography from the ancient Greeks to the present; issues and trends in modern Geography, for example, determinism; exceptionalism; cause and effect; theory in Geography; the quantitative revolution; the ecological approach; systems in Geography; humanistic Geography; radical Geography; etc.

RECOMMENDED READING

Reading lists will be distributed in class.

GEOG902 SPECIAL SEMINAR IN GEOGRAPHY

Contact hrs per week: 4 hrs
Assessment: Reports and tutorial participation

A guided reading course in a topic selected by the student in consultation with a staff member, leading to the preparation of an extensive review and critique of the relevant literature.

RECOMMENDED READING

Reading lists will be distributed in class.

GEOG903 SPECIAL PROJECT IN GEOGRAPHY

Contact hrs per week: 4 hrs
Assessment: Project report (external assessment)

A report on a piece of supervised research.

GEOG907 ADVANCED TOPICS IN ECONOMIC GEOGRAPHY

Contact hrs per week: 4 hrs
Assessment: Assignments, participation in seminars

Topics to be considered will vary from year to year according to staff involvement.

RECOMMENDED READING

Lists will be supplied in class.

GEOG908 ADVANCED TOPICS IN SOCIAL GEOGRAPHY

Contact hrs per week: 4 hrs
Assessment: Assignments, participation in seminars

Topics to be considered will vary from year to year according to staff involvement.

RECOMMENDED READING

Lists will be supplied in class.

GEOG909 ADVANCED TOPICS IN URBAN GEOGRAPHY

Contact hrs per week: 4 hrs
Assessment: Assignments, participation in seminars

Topics to be considered will vary from year to year according to staff involvement.

RECOMMENDED READING

Lists will be supplied in class.

GEOG911 ADVANCED TOPICS IN FLUVIAL GEOMORPHOLOGY

Contact hrs per week: 4 hrs
Assessment: Assignments, participation in seminars

Topics to be considered will vary from year to year according to staff involvement.

RECOMMENDED READING

Lists will be supplied in class.

GEOG912 ADVANCED TOPICS IN COASTAL GEOMORPHOLOGY

Contact hrs per week: 4 hrs
Assessment: Assignments, participation in seminars

Topics to be considered will vary from year to year according to staff involvement.

RECOMMENDED READING

Lists will be supplied in class.

GEOG913 ADVANCED TOPICS IN ENVIRONMENTAL MANAGEMENT

Contact hrs per week: *4 hrs*
Assessment: Assignments, participation in seminars

Topics to be considered will vary from year to year according to staff involvement.

RECOMMENDED READING

Lists will be supplied in class.

GEOG921 RESEARCH REPORT IN GEOGRAPHY A

Contact hrs per week: *4 hrs*
Assessment: Research report

A report on an investigation into an approved topic conducted by the candidate.

GEOG922 RESEARCH REPORT IN GEOGRAPHY B

Contact hrs per week: *4 hrs*
Assessment: Research report

A report on an investigation into an approved topic conducted by the candidate in an area not already covered in GEOG921.

GEOG923 MINOR THESIS

Contact hrs per week: *4 hrs*
Assessment: Thesis

A thesis embodying the results of an original investigation of a problem approved by the Department Chairman under the supervision of a staff member and in accordance with Section 14 of the Masters' Degree Requirements.

MATHEMATICS

DIPLOMA IN MATHEMATICS

The Graduate Diploma in Mathematics shall be subject to the University requirements for the award of Graduate Diplomas together with the following conditions.

1. A candidate shall undertake a course of graduate studies in one or more of the following fields:

   Applied Mathematics, Computing Science, Numerical Analysis, Operations Research, Physical Oceanography, Algebra, Functional Analysis, Mathematical Logic and Statistics.

2. Entry to the Diploma will normally be from a pass degree with an appropriate 3 year sequence in Mathematics, or, subject to the approval of the Academic Senate on the recommendation of the Chairman of the Department of Mathematics, from a degree or diploma containing substantial study in an appropriate discipline.

3. The diploma will normally occupy two sessions of full time study or four sessions of part time study, and will involve:

   The successful completion of the Mathematics Honours Seminar whose credit point value is 12, and the satisfactory completion of subjects chosen from the Schedule of Subjects for the Master of Science Degree (Department of Mathematics) and Schedule E1 of the Bachelor Degree Requirements to the credit point value of 36, provided that not less than 24 credit points shall be obtained in respect to graduate subjects taken from the Schedule of Subjects for the Master of Science Degree.

4. A candidate may not include in this degree programme any subject which the candidate has previously taken and had credited towards another degree or diploma of the University.

5. Not all graduate subjects will necessarily be available during a given year.

6. Unless otherwise determined by the Academic Senate, the registration of a candidate shall be terminated if that candidate fails subjects to the total value of 18 or more credit points.

MASTER OF SCIENCE

The degree of Master of Science (MSc) in the Department of Mathematics shall be subject to the University requirements for the award of the degree of Master together with the following conditions.

1. A candidate shall undertake research, or a course of graduate studies and research in one or more of the following fields:

   Applied Mathematics, Computing Science, Numerical Analysis, Operations Research, Physical Oceanography, Algebra, Functional Analysis, Mathematical Logic and Statistics.

2. Entry to the degree programme will normally be from an Honours degree in Mathematics or from a pass degree with an appropriate 3 year sequence in Mathematics. Entry to the degree programme may also be approved by the Academic Senate for candidates with the qualification of Diploma in Mathematics on the recommendation of the Chairman of the Department of Mathematics.

3. Where entry to the degree programme has been approved from an Honours degree or a Diploma in Mathematics, it will normally occupy two sessions of full time study or four sessions of part time study, and shall involve:

   (a) a thesis embodying the results of investigation to the value of 48 credit points, or

   (b) a minor thesis embodying the results of an investigation whose credit point value is 24 together with the satisfactory completion of graduate subjects chosen from the Schedule of Subjects for the Master of Science Degree (Department of Mathematics) to the value of 24 credit points, or

   (c) satisfactory completion of a project whose credit point value is 12 together with the satisfactory completion of graduate subjects chosen from the Schedule of Subjects for the Master of Science Degree (Department of Mathematics) to the value of 36 credit points.

4. Where entry to the degree programme has been approved from a pass degree, it will normally occupy four sessions of full time study or eight sessions of part time study, and shall involve:

   (a) a thesis embodying the results of an investigation whose credit point value is 48 together with the successful completion of the Mathematics Honours Seminar whose

credit point value is 12 and the satisfactory completion of subjects chosen from the Schedule of Subjects for the Master of Science Degree (Mathematics) and Schedule E1 of the Bachelor Degree Requirements to the credit point value of 36, provided that not less than 24 credit points shall be obtained in respect of graduate subjects taken from the Schedule of Subjects for the Master of Science Degree, or

(b) a minor thesis embodying the results of an investigation whose credit point value is 24 together with the successful completion of the Mathematics Honours Seminar whose credit point value is 12 and the satisfactory completion of subjects chosen from the Schedule of Subjects for the Master of Science Degree (Department of Mathematics) and Schedule E1 of the Bachelor Degree Requirements to the credit point value of 60, provided that not less than 48 credit points shall be obtained in respect to graduate subjects taken from the Schedule of Subjects for the Master of Science Degree, or,

(c) satisfactory completion of a substantial written project whose credit point value is 12 together with the successful completion of the Mathematics Honours Seminar whose credit point value is 12 and the satisfactory completion of subjects chosen from the Schedule of Subjects for the Master of Science Degree (Department of Mathematics) and Schedule E1 of the Bachelor Degree Requirements to the credit point value of 72, provided that not less than 60 credit points shall be obtained in respect to graduate subjects taken from the Schedule of Subjects for the Master of Science Degree.

5. A candidate may not include in this degree programme any subject which the candidate has previously taken and had credited towards another degree or diploma of the University.

6. All subjects chosen from either the Schedule of Subjects for the Master of Science Degree or Schedule E1 of the Bachelor Degree Requirements for inclusion into the degree programme shall be subject to the approval of the Chairman of the Department of Mathematics.

7. Not all graduate subjects will necessarily be available during a given year.

8. Notwithstanding the conditions relating to the limitation of time for the degree of Master, the registration of a candidate will be subject to termination if that candidate fails subjects to the total value of 18 or more credit points.

9. Each candidate for the degree programme under 3(c) or 4(c) shall be assigned a supervisor by the Chairman of the Department of Mathematics.

   Where a candidate has enrolled in a degree programme that includes either a thesis or a minor thesis, the Academic Senate shall appoint a supervisor on the recommendation of the Chairman of the Department of Mathematics.

10. The graduate project referred to in 3(c) and 4(c) shall be assessed by two examiners appointed by the Chairman of the Department of Mathematics.

DETAILS OF SUBJECTS

Textbooks and Recommended Reading

Students will be advised on the appropriate texts for each subject in the first lecture of the subject. In all cases, the lecturer should be consulted before textbooks are purchased.

Credit Points

All subjects listed below have a credit point value of 6.

Contact Hours

All subjects listed below involve at least one contact hour per week for both sessions, or its equivalent.

Method of Assessment

All 900-level subjects will be assessed by final examinations, or final examinations and limited assignments.

NOTE: Not all graduate subjects will necessarily be available during a given year.

MATH911 ADVANCED MATHEMATICS METHODS A

Asymptotic Expansions, Advanced Ordinary Differential Equations, and Weierstrassian Elliptic Functions.

RECOMMENDED READING

Jefferies, H. & Jefferies, B.S. *Methods of Mathematical Physics.* Cambridge.
Whittaker, E.T. & Watson, G.N. *A Course in Modern Analysis.* Oxford.

MATH912 CONTINUUM MECHANICS

The basic principles of continuum mechanics and the solved problems of finite elasticity. Equations for small deformations superimposed upon a state of finite strain and applications to stability problems. Linear elasticity. Selected problems from the theories of non-Newtonian fluids, plasticity and fibre-reinforced materials.

TEXTBOOK

Eringen, A.C. *Nonlinear theory of continuous media.* McGraw-Hill, New York.

RECOMMENDED READING

Truesdell, C.A. *The Elements of Continuum Mechanics.* Springer-Verlag, New York.
Truesdell, C.A. & Touplin, R. *The Classical Field Theories.* Hanbuch der Physik, Vol. III/1.
Truesdell, C.A. & Noll, W. *The Non-linear Field Theories of Mechanics.* Hanbuch der Physik, Vol. III/3.

MATH913 NONLINEAR PARTIAL DIFFERENTIAL EQUATIONS

The origin of nonlinear differential equations. General solutions of first and second order partial differential equations. Exact and analytic methods of solution for particular equations. Exact solutions using one parameter transformation groups. Perturbation methods and other approximate methods of solution.

TEXTBOOKS

Ames, W.F. *Nonlinear Partial Differential Equations in Engineering.* Vols. 1 & 2, Academic Press, New York.
Cole, J.D. *Perturbation Methods in Applied Mathematics.* Blaisdell Publishing Company, Wattham, Massachusetts.

MATH914 QUANTUM MECHANICS IN HILBERT SPACE

In the first part of the course the axioms of Hilbert space, linear functionals, and linear operators are introduced and the spectral theorem is discussed. The second part of the course deals with the physical foundations seen from a mathematical viewpoint. The course tries to show how physical ideas can be expressed much more forcefully and clearly if they are presented in the appropriate language.

RECOMMENDED READING

Dirac, P.A.M. *Principles of Quantum Mechanics.* Oxford, 1958.
Jauch, J.M. *Foundations of Quantum Mechanics.* Addison-Wesley, 1968.
Newmann, J. *Mathematical Foundations of Quantum Mechanics.* Princeton, 1955.
Schiff, L.I. *Quantum Mechanics.* McGraw-Hill, 1949.
Wigner, E.P. *Group Theory and its Applications to Quantum Mechanics of Atomic Spectra.* Academic Press, 1959.

MATH915 ADVANCED MATHEMATICAL METHODS B

Differential Difference Equations, The Renewal Equation, Expansions in Series, Higher Transcendental Functions.

RECOMMENDED READING

Bellman, R. & Cooke, K.E. *Differential-Difference Equations.* Academic Press.
Erdelyi, A. ed. *Higher Transcendental Functions.* McGraw-Hill.

MATH931 LINEAR PROGRAMMING

Linear programming using the matrix approach. Topics covered include: introduction to linear programming and revision of matrices, the simplex procedure, revised simplex procedure, parametric programming, integer programming, decomposition method, transportation and network problems.

RECOMMENDED READING

Gass, S.I. *Linear Programming.* McGraw-Hill. International Student Edition.
Hadley, G. *Linear Programming.* Addison-Wesley.

MATH932 OPTIMIZATION TECHNIQUES

Solution of non-linear optimization problems. Topics covered include: unconstrained minimisation using Fletcher-Powell and related techniques, the linear search problem, solution methods specific

MATH932 OPTIMIZATION TECHNIQUES (CONT'D)

to least squares problems, linear constraints, penalty function methods, Huhn Tucker conditions, Lagrange multipliers.

RECOMMENDED READING

Zangwill, W.I. *Non-Linear Programming, a Unified Approach.* Prentice-Hall, 1969.

MATH933 SPARSE MATRIX TECHNIQUES

Solution of partial differential equations using finite difference and finite element techniques. Topics covered include formulation of finite difference and finite element approximations to partial differential equations, matrix properties of the approximate equations, methods of solution of the approximate equations.

RECOMMENDED READING

Strang, G. & Fix, G. *An Analysis of the Finite Element.* Prentice-Hall.
Varga, R.S. *Matrix Iterative Analysis.* Prentice-Hall.

MATH934 ADVANCED NUMERICAL ANALYSIS

Solution of Ordinary and Partial Differential Equations. Integration including multiple integration. Solution of Integral Equations.

RECOMMENDED READING

Fox, L. *Numerical Solution of Ordinary and Partial Differential Equations. Pergamon Press, 1962.*

MATH935 NUMERICAL LINEAR ALGEBRA

Modern methods of solving the algebraic eigenvalue problem including the generalized problem $Ax = \lambda Bx$.

RECOMMENDED READING

Wilkinson, J.H. *The Algebraic Eigenvalue Problem.* Oxford University Press.

MATH941 SIMULATION TECHNIQUES

Principles of Modelling. Classification of Simulation Modelling. Continuous models compared and contrasted with discrete models. Generation of random numbers. Generation of stochastic variates. Simulation languages. Validation, and design of computer simulation experiments.

RECOMMENDED READING

Naylor, T., Balintfy, J., Burdich, D. & Chu, K. *Computer Simulation Techniques.* John Wiley.

MATH942 REPLACEMENT THEORY AND POPULATIONS

Continuous and discrete mathematical models of populations including age structures. Failure distributions. Operating characteristics of maintenance policies. Optimisations of replacement policies. Repairman problem. Redundancy optimisation.

RECOMMENDED READING

Barlow, R.E. & Proschan, F. *Mathematical Theory of Reliability.* John Wiley.

MATH943 QUEUEING

Analysis of arrival patterns. Queue disciplines. The $L = \lambda W$ relationship. The simple queue. Queues in series and parallel. Transients in queues. The output of a queue. Correlations and queues. Graphical representation.

RECOMMENDED READING

Cox, D.R. & Smith, W.L. *Queues.* Methuen.

MATH944 INVENTORY CONTROL

Structure of inventory models. Static and dynamic models. Economic lot size models and their sensitivity. Two bin models. Karlin Fabens model. Inventory control and computer systems.

RECOMMENDED READING

Arrow, K.J., Karlin, S. & Scarf, H. *Studies in the Mathematical Theory of Inventory and Production.* Stanford.

MATH945 PRINCIPLES OF OPERATING RESEARCH

The construction of models for decision analysis. Case exercises in Operations Research with particular application to local industries.

RECOMMENDED READING

Martin, M. & Denison, R. *Case Exercises in Operations Research.* Wiley.
Rivett, P. *Principles of Model Building.* Wiley.

MATH951 COASTAL DYNAMICS

Generation and propagation of continental shelf waves of high and low frequency in homogeneous and non-homogeneous oceans, response of the ocean over a shelf to atmospheric disturbances, detection and measurement of shelf waves, dissipative influences, standing edge waves and their relation to beach geomorphology, modelling of physical marine systems.

RECOMMENDED READING

Krauss, W. *Dynamics of the Homogeneous and the Quasihomogeneous Ocean.* Gebrüder Borntraeger, 1973.
National Academy of Sciences. *Numerical Models of Ocean Circulation.* NAS Printing and Publishing Office, 1975.
Nihoul, J.C.J. *Modelling of Marine Systems.* Elsevier, 1975.

MATH952 DATA ANALYSIS

Oceanographic data acquisition, preliminary data editing and reduction, probe arrays, first and second order recursive filters, bandpass filters, Fourier transform techniques in oceanography, statistical errors, data windows, coherence functions, spectral studies of oceanographic phenomena.

RECOMMENDED READING

Bath, M. *Spectral Analysis in Geophysics.* Elsevier, 1974.
Kinsman, B. *Wind Waves.* Prentice-Hall, 1965.
Lanczos, C. *Applied Analysis.* Prentice-Hall, 1964.

MATH953 WAVES AND CURRENTS

Basic equations of motion, perturbation equations, density fields, internal waves and currents, topographic effects, propagation of tides, current metres, use of current measurements, major ocean currents, geostrophic currents, inertia currents, gradient currents, wind-driven waves and currents in a homogeneous and non-homogeneous ocean.

RECOMMENDED READING

Defant, A. *Physical Oceanography.* Pergamon, 1960.
Kinsman, B. *Wind Waves.* Prentice-Hall, 1965.
Krauss, W. *Dynamics of the Homogeneous and the Quasihomogeneous Ocean.* Gebrüder Borntraeger, 1973.
Newmann, G. *Ocean Currents.* Elsevier, 1968.

MATH961 FUNCTIONAL ANALYSIS

Banach spaces, Linear Operators between Banach spaces, the Uniform Boundedness Principle, Closed graph theorem and open mapping theorem, Hahn-Banach theorem, applications to some of the following: Fourier series, integral equations, quadrature formulae, approximation theory, analytic function theory, spectral theory.

RECOMMENDED READING

Dunford, N. & Schwartz, J. *Linear Operators Part I: General Theory.* Interscience.
Riesz, F. & Sz.-Nagy, B. *Functional Analysis.* Ungar.
Rudin, W. *Real and Complex Analysis.* McGraw-Hill.

MATH962 HARMONIC ANALYSIS

The course will consist of a certain amount of Lebesque Integration Theory which will be applied to a discussion of various topics in the theory of Fourier Series. The generalization of Fourier Series to harmonic analysis on groups will also be considered.

MATH962 HARMONIC ANALYSIS (CONT'D)

RECOMMENDED READING

Edwards, R.E. *Fourier Series, A Modern Introduction Vols. 1 and 2.* Holt, Rinehart and Winston.
Katznelsion, Y. *Introduction to Abstract Harmonic Analysis.* McGraw-Hill.

MATH963 INTEGRATION THEORY AND ITS APPLICATIONS

Integration on a general measure space, the space L^p of functions having integrable p^{th} power, geometrical properties of L^p and other Banach spaces, applications to analysis and the measure theoretic formulation of probability theory.

RECOMMENDED READING

Bartle, R.G. *The Elements of Integration.* Wiley.
Day, M.M. *Normed Linear Spaces.* Springer.
Halmos, P.R. *Measure Theory.* Van Nostrand.

MATH964 DISTRIBUTIONS

Mikusinskis theory of convolution quotients, and an introduction to L. Schwartz's theory of distributions. Properties of the space of continuous functions of a single real variable (equipped with a suitable topology) and its dual space.

RECOMMENDED READING

Erdélyi, A. *Operational Calculus and Generalized Functions.* Holt, Rinehart and Winston, New York, 1966.
Gel'fand, I.M. & Shilov, G.E. *Generalized Functions, Vol. 1.* Academic Press, New York, 1964.
Neumann, H. *Schwartz Distributions, Notes on Pure Mathematics.* The Australian National University, Canberra, 1969.
Schwartz, L. *Théorie des distributions.* Hermann, Paris, 1966.

MATH965 INDEPENDENCE PROOFS IN SET THEORY

Independence of the axioms of constructibility and choice and of the Generalized Continuum Hypothesis.

RECOMMENDED READING

Rosser, J.B. *Simplified Independence Proofs.* Academic Press, New York, 1969.

MATH966 LOGIC AND SET THEORY

Primitive Recursive and recursive functions. Arithmetization, Gödels Theorem, Recursive undecidability, Axioms for set theory, ordinal numbers, equinumerocity, Hartog's theorem, the Axiom of Choice.

RECOMMENDED READING

Mendelson, E. *Introduction to Mathematical Logic.* Van Nostrand, New York, 1964.

MATH967 COMBINATORY LOGIC

Introduction to Pure and Illature combinatory logic, relation to lambda-conversion, functionality, application to propositional and predicate calculus.

RECOMMENDED READING

Bunder, M.W. *Set theory based on Combinatory Logic.* Thesis, Amsterdam, 1969.
Hindley, J.R., Lercher, B. & Seldin, J.P. *Introduction to Combinatory Logic.* Cambridge University Press, London, 1972.

MATH968 TOPICS IN ALGEBRA A

Partially ordered sets, lattices, modular lattices, Boolean Algebras and Boolean rings, ortho-modular lattices.

MATH968 TOPICS IN ALGEBRA A (CONT'D)

RECOMMENDED READING

Blyth, T.S. and Janowitz, M.F. *Residuation Theory*. Pergamon Press.
Halmos, P.R. *Lectures on Boolean Algebra*. Van Nostrand.
Sikorski, R. *Boolean Algebras*. Springer-Verlag.
Szász, G. *Introduction to Lattice Theory*. Academic Press.

MATH969 TOPICS IN ALGEBRA B

Partially ordered sets and residuated mappings, Boolean lattices, involution posets, filters in lattices and posets.

RECOMMENDED READING

Birkhoff, G. *Lattice Theory*. American Mathematical Society.
Blyth, T.S. & Janowitz, M.F. *Residuation Theory*. Pergamon Press.
Halmos, P.R. *Lectures on Boolean Algebra*. Van Nostrand.

MATH971 DECISION THEORY

Subjective Probability, Axiomatic Development of utility theory, conjugate prior distributions, Estimation and Testing of Hypothesis, Sequential Decision Procedures, Martingales, Optimality Principle, House Hunting Problem, Parking Place Problem, Quiz Show Problem, Duel Problems, Control and Search Problems.

RECOMMENDED READING

Chow, Y.S., Robbins, S. & Siegmund, D. *Great Expectations: The Theory of Optimal Stopping*. Houghton Mifflin, 1971.
DeGroot, M.H. *Optimal Statistical Decisions*. McGraw-Hill, 1970.

MATH972 REGRESSION ANALYSIS

Linear Regression, Multiple Regression, Examination of Residuals, Model Building, Stepwise and stagewise regression, Relationship between regression analysis and analysis of variance models, Non-linear Models, Models not of Full Rank.

RECOMMENDED READING

Draper, N.R. & Smith, H. *Applied Regression Analysis*. John Wiley, 1967.
Searle, S.R. *Linear Models*. John Wiley, 1971.

MATH973 TIME SERIES

Autocorrelation function, Periodogram Analysis, spectrum and spectral density function, Models for Stationary and Non-Stationary time series, Identification and Estimation of ARIMA models, seasonal Models, Forecasting, Transfer Function Models.

RECOMMENDED READING

Box, E.P. & Jenkins, G.M. *Time Series Analysis: Forecasting and Control*. 1970.
Nelson, R. *Applied Time Series Analysis*. Holden Day, 1973.

CSCI911 COMPUTER METHODS

Review of programming languages: FORTRAN, ALGOL, COBOL, SIMULA, SIMSCRIPT. Programming techniques and algorithms. Programming style and structured programming. Algorithms and problem solving methods. Mathematical software. Programme packages. Interactive computing.

RECOMMENDED READING

Dahl, O.J. ed. *Structural Programming*. Academic Press, London, 1972.
Keznighan, B.W. & Plauger, P.J. *The Elements of Programming Style*. McGraw-Hill, New York, 1974.
Ralston, A. & Wilf, A.S. *Mathematical Methods for Digital Computers*. Vol. 1. John Wiley and Sons Inc., New York, 1967.
Sammet, J.E. *Programming Languages: History and Fundamentals*. Prentice Hall, Englewood Cliffs, N.J., 1969.
Smith, B.T., et al. *Matrix Eigensystem Routines - EISPACK Guide*. Springer Verlag, Berlin, 1974.

CSCI921 INFORMATION PROCESSING SYSTEMS

Data structures including lists, strings, stacks, arrays, trees. Storage systems and structures. Data representation and retrieval. Storage allocation and collection. Sorting, merging and searching. File systems and file accessing mechanisms. Document handling systems. Data base generation, data base system architecture.

RECOMMENDED READING

Berztiss, A.T. *Data Structures, Theory and Practice.* 2nd ed. Academic Press, London, 1975.
Knuth, D.E. *The Art of Computer Programming.* Vol. 3. Addison-Wesley Publishing Co., London, 1973.
Langefors, B. *Theoretical Analysis of Information Systems.* 4th ed. Petrocelli Books, New York, 1973.

CSCI931 COMPILERS

The course is to emphasize the techniques involved in the analysis of source language and the generation of object code.

Review of assembly techniques, symbol table techniques and macros. Review of syntactic analysis and other forms of programme recognition. Translation of arithmetic expressions. Storage allocation techniques. Dynamic storage allocation.

One-pass compilation techniques: recursive descent compilation; LL(1) grammars and analyzers; LR grammars and analyzers. Introduction to compiler-compilers.

RECOMMENDED READING

Bauer, F.L. & Eickel, J. eds. *Compiler Construction, Lecture Notes in Computer Science.* Vol. 21. Springer Verlag, Berlin, 1974.
Gries, D. *Compiler Construction for Digital Computers.* J. Wiley and Sons, New York, 1971.
Hopgood, F.R.A. *Compiling Techniques.* American Elsevier, New York, 1971.

CSCI941 ADVANCED TOPICS IN COMPUTING SCIENCE

Topics will be selected from those areas of computing science in which staff members or visiting staff members of the department are engaged in active research.

RECOMMENDED READING

Prescribed by instructor.

MECHANICAL ENGINEERING

MASTER OF ENGINEERING

Entry under Section 5 - Graduates with Honours Degree

Students entering the course under Section 5 of the Conditions for the Award of the Degree of Master are required to complete subjects from the Schedule of Graduate Subjects with an aggregate of not less than 48 credit points. Programmes of study provided by the Department of Mechanical Engineering include a dissertation with a credit point rating of 8 (MECH950), 28 (MECH951), or 48 (MECH952), depending on whether the course chosen is mainly by formal subject matter (8 subjects), or by a combination of dissertation and formal subject matter (4 subjects) or entirely by dissertation.

Entry under Section 6 - Graduates with Pass Degree

Students entering the course under Section 6 of the Conditions for the Award of the Degree of Master are required to complete subjects with an aggregate of not less than 96 credit points. Programmes of study under this section will normally consist of the subject MECH999 Advanced Topics in Engineering (48 credit points) plus one of the programmes provided under Section 6 (above).

DESCRIPTION OF SUBJECTS

Each of the subjects described below, with the exception of MECH950, 951, 952 and 999, are valued at 5 credit points and have a total contact of 4 hours per week for one session, although in certain cases they may be offered over two sessions.

Similar subjects offered by other departments will be acceptable for the Masters degree course in Mechanical Engineering subject to the approval by the Departmental Chairman and the Graduate Studies Committee.

MECH901 ADVANCED HEAT TRANSFER 1

CONDUCTION HEAT TRANSFER. Unidimensional heat flow; analysis of extended surfaces; two and three dimensional conduction; unsteady conduction in one or more dimensions; analytical, numerical and analogical methods of solution; transient systems; initial value and boundary value problems; nonhomogeneous bodies; anisotropic bodies; variable material properties.

RADIATION HEAT TRANSFER. Thermal radiation properties of materials, black bodies - characteristics of real solids, liquid and gases; radiation exchange between infinite surfaces and between finite surfaces; shape factor for various configurations; radiation shields; re-radiating surfaces and electrical analogies, radiation behaviours of gases and vapours.

RECOMMENDED READING

Chapman. *Heat Transfer.*
Kreith. *Principles of Heat Transfer.*
Love. *Radiative Heat Transfer.*
Ozisih. *Boundary Value Problems of Heat Conduction.*
Schneider. *Conduction Heat Transfer.*
Sparrow & Cess. *Radiation Heat Transfer.*

MECH902 ADVANCED HEAT TRANSFER 2

Revision of the fundamental principles of viscous fluid motion and boundary layer motion. Dimensional analysis, similarity parameters, method of differential similarity. Correlation of experimental results. Forced and free convection. Exact solutions for laminar flow. Analogy between heat and momentum transfer in turbulent flow. Heat exchangers. Design and selection.

RECOMMENDED READING

Chapman. *Heat Transfer.* 2nd ed.
Kreith. *Principles of Heat Transfer.* 3rd ed.
Rohsenow & Choi. *Heat, Mass & Momentum Transfer.*

MECH903 STATISTICAL THERMODYNAMICS

History and review of classical thermodynamics and kinetic theory of an ideal monatomic gas; equations of state; statistical mechanics for systems of independent particles; concept of entropy; Maxwell, Boltzmann, Bose-Einstein and Fermi-Dirac statistics; partition function; velocity and energy distributions; classical-statistical comparisons; quantum mechanics; Schrödinger wave equation and applications; electronic states; the photon gas; the Einstein solid; diatomic and polyatomic gases; low temperature effects; statistical mechanics for systems of dependent particles; behaviour of real gases and liquids; irreversible processes; thermoelectric and thermochemical phenomena.

MECH903 STATISTICAL THERMODYNAMICS (CONT'D)

RECOMMENDED READING

Lay. *Thermodynamics.* Merrill, 1963.
Lee, Sears and Tuncotte. *Statistical Thermodynamics.*
Kreith. *Introduction to Statistical Thermodynamics.*
Sonntag and Van Wylen. *Fundamentals of Statistical Thermodynamics.*
Ter Haar. *Elements of Thermostatics.*

MECH904 GAS DYNAMICS AND COMPRESSIBLE FLUID FLOW

Revision of one-dimensional gas dynamics, including isentropic flow, normal shock waves, frictional flow, diabatic flows. Jet and rocket propulsion. Two-dimensional compressible fluid flow. Governing equations. Prandtl-Meyer flow. Method of characteristics for supersonic flows. Oblique and conical shock waves. Shock polar diagrams.

RECOMMENDED READING

Chapman & Walker. *Introductory Gas Dynamics.*
Liepman & Roshko. *Elements of Gas Dynamics.*
Owczarek. *Fundamentals of Gas Dynamics.*
Thompson. *Compressible Fluid Dynamics.*

MECH905 ADVANCED DYNAMICS

Kinematics and dynamics of particles and rigid bodies in three-dimensional motion; fixed and moving reference frames; Newtonian dynamics; inertia tensor; Euler's equations of motion; general motion of gyroscopes and rigid bodies in space.

Calculus of variations; Functions and functionals; stationary values of integrals; Euler-Lagrange equation; constraints and Lagrange multipliers; fixed and variable end points; problems of Lagrange,Mayer and Bolza.

Variational dynamics; Performance optimisation; generalised co-ordinates; Lagrange equation; Hamilton's principle; impulsive motion; oscillatory motion.

RECOMMENDED READING

To be advised during course.

MECH906 EXPERIMENTAL AND ANALYTICAL MODELLING

Stochastic processes; Random signal analysis; Correlation function; Probability functions and spectral density functions; System identification; Correlation analysis; Spectral analysis.

Modelling of continuous systems using analytical methods; Lumped parameter systems; Linearisation.

Solution of equations. Parameter estimation.

Rate expressions; introduction to reactor design; non-ideal flow in reactors.

RECOMMENDED READING

Newland, D.E. *Random Vibrations and Spectral Analysis.* Longman, 1975.

MECH907 DESIGN OF CONTROL SYSTEMS

Review of classical control techniques; Multi-input multi-output systems; Transfer Functions; State space analysis. Stability analysis. Interaction and inverse Nyquist array. Optimal control.

RECOMMENDED READING

Broyden, C.G. *Basic Matrices.* Macmillan, 1975.
Ogata, K. *State Space Analysis of Control Systems.* Prentice-Hall.
Raven, F.H. *Automatic Control Engineering.* McGraw-Hill.

MECH908 COMPUTER AIDED DESIGN

The application of computers to design; standards for documentation and checking of computer aided engineering computations; computer simulation and optimising techniques.

MECH908 COMPUTER AIDED DESIGN (CONT'D)

RECOMMENDED READING

ACADS Policy Document 74/1. *Recommended Standard for Documentation and Checking of Computer-Aided Engineering Computations.* 1974.
Mischke, C.R. *An Introduction to Computer-Aided Design.* Prentice-Hall, 1968.
Prince, M.D. *Interactive Graphics for Computer-Aided Design.* Addison-Wesley, 1971.

Plus others to be advised during course appropriate to individual assignments.

MECH909 WASTEWATER TREATMENT AND DISPOSAL

Developments and trends in wastewater engineering; wastewater characteristics; physical unit operations; chemical unit processes; biological unit processes; design of facilities for physical and chemical treatment of wastewater; design of facilities for biological treatment of wastewater; advanced wastewater treatment; water-pollution control and effluent disposal; wastewater treatment studies; legal requirements.

RECOMMENDED READING

Culp, R.L. & Culp, G.L. *Advanced Wastewater Treatment.* Van Nostrand Reinhold Company.
Metcalf and Eddy, Inc. *Wastewater Engineering: Collection, Treatment, Disposal.* McGraw-Hill, 1972.

MECH910 WATER RESOURCE MANAGEMENT

Water uses, water quality criteria and waste inputs. Principles of water quality systems analysis. Construction of stream and river water quality models. Application of stream and river water models. Construction of estuarine water quality models. Applications of estuarine models.

RECOMMENDED READING

Hall, W.A. *Water Resources Systems Engineering.* McGraw-Hill.
Linsley, R.K. & Franzine. *Water Resources Engineering.* McGraw-Hill.
Thomann, R.V. *Systems Analysis and Water Quality Management.* McGraw-Hill.

MECH911 BULK SOLIDS HANDLING SYSTEMS 1

Flow patterns of bulk solids constrained by bins and hoppers; theory of flow; determination of flow properties; hopper design; bin loads.

RECOMMENDED READING

Selected research papers.

MECH912 BULK SOLIDS HANDLING SYSTEMS 2

Further consideration concerning bin design; failure criteria for bulk solids; flow promotion; two-phase flow; effects of interstitial gas on flow of fine powders; screening and grading of bulk solids; mixing of dry solids; dust explosions.

RECOMMENDED READING

Selected research papers.

MECH913 PNEUMATIC AND HYDRAULIC TRANSPORT OF BULK SOLIDS

Classification and selection of transport systems; flow patterns; pressure drop, minimum operating velocities; design parameters and examples; feeding and withdrawal methods.

RECOMMENDED READING

Selected research papers.

MECH914 AIR POLLUTION

Elements of the air pollution problem. Origin and fate of air pollutants. Air pollution meteorology. Air pollution chemistry. Micrometeorology. Atmospheric diffusion. Combustion processes and the formation of gaseous and particulate pollutants. Air pollution control principles.

MECH914 AIR POLLUTION (CONT'D)

RECOMMENDED READING

Bibbero, R. & Young, I. *Systems Approach to Air Pollution Control.* John Wiley, 1974.
Crawford, M. *Air Pollution Control Theory.* McGraw-Hill, 1976.
Ross, R.D. ed. *Air Pollution and Industry.* Van Nostrand Reinhold Company.
Seinfeld, J.H. *Air Pollution: Physical and Chemical Fundamentals.* McGraw-Hill.

MECH915 NOISE POLLUTION

The behaviour of sound waves. Levels, decibels and spectra. Sound transducers. Field measurements: equipment and techniques. Data analysis. The measurement of power levels and directivity patterns of noise sources. Sound propagation outdoors. Sound in small spaces. Sound in large rooms. Acoustical properties of porous materials. Interaction of sound waves with solid structures. Noise generation in industry. Noise of gas flows. Damage-risk criteria for hearing. Criteria for noise in communities, buildings and vehicles.

RECOMMENDED READING

Beranek, L. *Noise and Vibration Control.* McGraw-Hill, 1971.
Petrusewicz, S.A. & Longmore, D.K. eds. *Noise and Vibration Control for Industrialists.* Elek Science, 1974.
Yerges, L.F. *Sound, Noise and Vibration Control.* Van Nostrand Reinhold Company.

MECH916 DESIGN OF CONTROL SYSTEMS II - OPTIMAL CONTROL

Formulation of the optimal control problem: performance criteria; solution of the optimal control problem using calculus of variations, dynamic programming and the maximum principle; applications.

RECOMMENDED READING

Elgerd, O.L. *Control Systems Theory.* McGraw-Hill.
Noton, M. *Introduction to Variational Methods in Control Engineering.* Pergamon Press.
Ogata, K. *State Space Analysis of Control Systems.* Prentice-Hall.

MECH917 REFRIGERATION AND AIR CONDITIONING

Theoretical aspect of refrigeration and air conditioning. Advanced treatment of topics selected from various systems. Design and calculations.

RECOMMENDED READING

Stoecker, W.F. *Refrigeration and Air Conditioning.* McGraw-Hill.
Jones, W.P. *Air Conditioning Engineering.* Edward Arnold.
Harris, N.C. & Conde D.F. *Modern Air Conditioning Practice.* 2nd ed. McGraw-Hill.
Barron, R. *Cryogenic Systems.* McGraw-Hill.

MECH918 DESIGN OF CONTROL SYSTEMS III - INVERSE NYQUIST ARRAY TECHNIQUES

Review of matrix analysis; input-output systems; transfer matrices; system realisation; interactive graphics; diagonal dominance; Inverse Nyquist array; applications.

RECOMMENDED READING

Rosenbrock, H.H. *State Space and Multivariable Theory.* Nelson.
Rosenbrock, H.H. *Computer Aided Control System Design.* Academic Press.
Selected research papers.

MECH919 SPECIAL TOPICS IN MECHANICAL ENGINEERING

There is no set syllabus for this subject. It is intended that it normally be offered on a specialised mechanical engineering topic given by visiting academic staff or engineering consultants.

MECH920 NUMERICAL METHODS IN MECHANICAL ENGINEERING

Iteration techniques; iterpolation; curve fitting; matrix inversion and evaluation of eigenvalues; numerical differentiation and integration; solution of ordinary differential equations, second order partial differential equations and integral equations; accuracy and conservative formulations; introduction to stability analysis; application to engineering problems.

MECH920 NUMERICAL METHODS IN MECHANICAL ENGINEERING (CONT'D)

RECOMMENDED READING

Conte, S.D. and de Boor C. *Elementary Numerical Analysis.* McGraw-Hill.
Henrici, P.K. *Elements of Numerical Analysis.* John Wiley and Sons.
Wendroff, B. *Theoretical Numerical Analysis.* Academic Press, 1967.
Selected research papers.

MECH950 DISSERTATION

8 credit points

MECH951 DISSERTATION

28 credit points

MECH952 DISSERTATION

48 credit points

MECH999 ADVANCED TOPICS IN ENGINEERING

Double session subject, 48 credit points

Details of this subject are the same as for ELEC999 Advanced Topics in Engineering as described in the postgraduate entry under the Department of Electrical Engineering.*

*See p.358

METALLURGY

MASTER OF METALLURGY

Entry under Section 5 - Honours Graduates

A candidate who enters under Section 5 of the Conditions for the Award of the Degree of Master, i.e. who has qualified for the Bachelor of Metallurgy with honours or equivalent will be required to complete the subject METL990 Major Thesis which includes a programme of full-time research for at least two academic sessions and the submission of a thesis and is valued at 48 credit points.

Entry under Section 6 - Pass Graduates

A candidate who enters under Section 6 of the Conditions for the Award of the Degree of Master, i.e. who has qualified for the degree of Bachelor of Metallurgy at a standard below honours, shall complete a programme of full-time study for at least four academic sessions and obtain 96 credit points made up as follows:

(i)	METL991	Metallurgy Project 2	18 credit points
(ii)	METL999	Advanced Topics in Metallurgy (Described below)	30 credit points
(iii)	METL990	Major Thesis (as for honours entry)	48 credit points

DETAILS OF SUBJECT

METL999 ADVANCED TOPICS IN METALLURGY

Double session subject, 30 credit points

A selection of topics chosen from the following list. Each topic is credited with 6 credit points and involves three contact hours for a session. For each topic a minimum of one lecture per week will be offered with associated tutorials and assignments. Examination will be by written papers and assessment of assignments.

1. MECHANICAL BEHAVIOUR OF MATERIALS

Lectures and advanced reading assignments on the following:-

Relationships among elastic constants for isotropic continua, generalised Hook's law, yield surface for anisotropic materials, development of preferred orientations, elastic properties of dislocations, dislocation interactions and reactions, strain hardening.

2. MECHANICAL BEHAVIOUR OF MATERIALS AT ELEVATED TEMPERATURES

Lectures and advanced reading assignments on the following:-

Hot deformation processes; creep; superplasticity; high temperature fracture; dynamic recovery and recrystallisation.

3. FRACTURE OF MATERIALS

Lectures and advanced reading assignments on the following:-

Plastic constraint, fracture mechanics for conditions of plane stress and strain and of general yielding, C.O.D. testing, fatigue, stress corrosion, mechanisms of crack nucleation and propagation.

4. STRUCTURE AND PROPERTIES OF MATERIALS

Lectures and advanced reading assignments on the following:-

Strengthening of ferrous and non-ferrous alloys; relationships between strength, toughness and micro-structure; thermomechanical treatments, ausforming, isoforming, austempering, martempering, maraging etc; high performance alloys.

5. ADVANCED METALLOGRAPHIC METHODS

Lectures and advanced reading assignments on the following:-

Advanced theory and practice of light-optical and electron-optical techniques for the analysis of the fine structure of metals and other materials.

6. PROCESS MODELLING I

Lectures and advanced reading assignments on the following:

Theory and application of computing techniques for process modelling and simulation.

METL999 ADVANCED TOPICS IN METALLURGY (CONT'D)

7. PHYSICS OF METALS

Lectures and advanced reading assignments on the following:

Advanced geometrical, kinematical and dynamical electron and X-ray diffraction theory; reciprocal lattice, stereographic projection.

8. SOLIDIFICATION

Lectures and advanced reading assignments on the following:

Nucleation. Growth structures in pure metals, single and polyphase alloys. Cast structure development and control. Grain refinement and modification. Segregation. Thermodynamics and fluid flow in solidification. Processing and properties.

9. ADVANCED EXTRACTIVE METALLURGY

Lectures and advanced reading assignments on the following:

Mixing and segregation. Effect on yield. Design for heterogeneous reacting systems. Fluid-solid systems. Reaction and mass transfer control. Single and multiple particle systems. Fluid-fluid systems. Pure mass transfer. Mass transfer with chemical reaction. Rate expressions for various kinetic regimes. Design strategy for single and multiple reactors. Applications.

PHILOSOPHY

GRADUATE DIPLOMA IN PHILOSOPHY

The purpose of the Graduate Diploma in Philosophy is to provide in a recognised University course a means for graduates with limited acquaintance with logic and philosophy to acquire competence in these subjects at a reasonably advanced level. The Diploma shall be subject to the University requirements for the award of Graduate Diplomas together with the following conditions.

1. Candidates are required to complete subjects totalling 48 credit points from those listed in Schedule A under 'Philosophy'. Of these at least 24 must be from 300-level subjects and the remainder from 200-level subjects.

2. A candidate may not include in his or her diploma programme any course component which substantially duplicates a subject or part of a subject previously passed by the candidate as part of any degree or diploma already held or previously attempted.

3. The selection of courses and the programme of study shall be approved by the Departmental Chairman.

4. A full-time candidate shall normally complete the diploma in one academic year, a part-time candidate in no less than two and no more than three academic years.

5. Admission to candidature for the Diploma is on the recommendation of the Chairman of the Philosophy Department who shall assess the applicant's aptitude for sustained philosophical study at a reasonably advanced level.

MASTER OF ARTS

PHIL913 ADVANCED PHILOSOPHICAL TOPICS 913

Double session subject, 48 credit points
Variable combination of seminars, lectures and lecture-discussions
Pre-requisites: Entry is restricted to students seeking admission to the Master's degree under section 6 of the requirements for the Master's degree
Assessment: Essays and three hour written examinations as laid down in the requirements for such components as are approved or prescribed

An approved or prescribed selection of courses provided by the Department under other designations deemed by the Departmental Chairman to be appropriate as a foundation for postgraduate studies, given the background and intended pursuits of the individual student.

TEXTBOOKS AND RECOMMENDED READING

As laid down in the requirements for the component courses.

PHIL999 MAJOR THESIS

Double session subject, 48 credit points

PHYSICS

MASTER OF SCIENCE

The degree of Master of Science (MSc) by course work in the Department of Physics shall be subject to the University requirements for the award of the degree of Master together with the following conditions.

1. Entry to the degree programme will be normally from an Honours degree in Physics or from a pass degree with an appropriate three year sequence in Physics.

2. Where entry to the degree programme is from an Honours degree, it will normally occupy two sessions of full-time study or four sessions of part-time study. It will require the successful completion of 48 credit points. Of these:

   (i) a minimum of 36 credit points shall be taken from the schedule of Graduate Level Subjects in Physics excluding PHYS905 Mathematical Methods for Physicists A and PHYS955 Mathematical Methods for Physicists B, and

   (ii) a maximum of 12 credit points shall be taken under PHYS905 and PHYS955, excluding any similar subjects previously taken and credited towards another degree of the University.

3. Where entry to the degree programme is from a pass degree, it will normally occupy four sessions of full-time study or eight sessions of part-time study. It will require the successful completion of 96 credit points. Of these:

   (i) a minimum of 36 credit points shall be compiled from 400-level physics subjects excluding PHYS410.

   (ii) a maximum of 12 credit points of 300-level and higher subjects compiled from the Schedules E-1 and E-2 excluding any subjects previously taken and credited towards another degree of the University;

   (iii) same as 2(i) above,

   (iv) same as 2(ii) above.

COURSE OBJECTIVES

After completion of an undergraduate degree in physics, an individual is equipped to work as a professional physicist in research and industry under the direction of more highly qualified staff. In order to achieve some measure of independence, he/she requires advanced training. Additionally, a teacher needs to keep abreast of current developments (and exercise independent judgement of their importance) to be fully effective; this requires broader and more advanced training in the discipline. The objectives of the present programme are to provide, initially, a minimum offering necessary to accomplish the above and also to give supplementation to his or her mathematical background sufficient for coherence and comprehension of the course.

DETAILS OF SUBJECTS

PHYS905 MATHEMATICAL METHODS FOR PHYSICISTS A

42 hrs lectures
Pre-requisite, Co-requisite and Assessment: to be determined by the Departmental Chairman

Ordinary Differential Equations; Partial Differential Equations; Non-linear Partial Differential Equations.

TEXTBOOK

To be determined after consultation with the Departmental Chairman.

PHYS910 ADVANCED PROJECT IN PHYSICS A

First session subject
42 hrs laboratory
Assessment: This will be based on the satisfactory operation of the completed experiments and the adequacy of the written descriptions of the experiments.

PHYS910 ADVANCED PROJECT IN PHYSICS A (CONT'D)

The student will be required to design and construct several self-contained experiments at the level of those encountered in PHYS309 Advanced Experimental Physics. The number and type shall be determined by two members of the academic staff of the Department of Physics.

PHYS942 ELEMENTARY PARTICLE PHYSICS

Double session subject
42 hrs lectures
Pre-requisite: PHYS321 Solid State, Nuclear and Astro-Physics (or PHYS322 Astro-, High Energy, Nuclear and Solid State Physics) and PHYS443 Quantum Mechanics and Statistical Mechanics
Assessment: Based on assigned problems, tests and sessional examinations

Properties of Elementary Particles; Interaction of Elementary Particles with Matter; Strong Interactions; Feynman Diagrams; Electromagnetic Interactions; Weak Interactions; The K°-$\bar{K}^{\circ}$ System and CP Violation; The Eight-fold Way, Quarks and SU(3) Symmetry.

TEXTBOOK

Longo, M.J. *Fundamentals of Elementary Particle Physics.* McGraw-Hill, 1973.

PHYS944 ADVANCED QUANTUM MECHANICS

Double session subject
42 hrs lectures
Pre-requisite: PHYS443 Quantum Mechanics and Statistical Mechanics
Assessment: As for PHYS942

Review of Non-Relativistic Quantum Mechanics; Klein-Gordon Equation; Dirac Equation; Free Electron and Positron States; Electrons and Positrons in a Coulomb Field; Spin; Spin-Orbit Interaction; Foldy-Wouthuysen Transformation; Dirac-Hartree-Fock Theory for Many-Electron Atoms; Second Quantization, Quantization of the Electromagnetic Field; The Hanbury-Brown Twiss Experiment; Glauber States; Uncertainty in Phase and Photon Number.

TEXTBOOKS

Das, T.P. *Relativistic Quantum Mechanics of Electrons.* Harper & Row.
Klauder, J.R. & Sudarshan, E.C.G. *Fundamentals of Quantum Optics.* Benjamin.

RECOMMENDED READING

Bjorken, J.D. & Drell, S.D. *Relativistic Quantum Mechanics.* McGraw-Hill.
Kay, S.M. & Maitland, A. *Quantum Optics.* Academic Press.

PHYS946 ADVANCED SOLID STATE PHYSICS

Double session subject
42 hrs lectures
Pre-requisite: PHYS401 Theoretical Mechanics and Electromagnetism, PHYS443 Quantum Mechanics and Statistical Mechanics, and PHYS446 Solid State Physics
Co-requisite: PHYS944 Advanced Quantum Mechanics
Assessment: As for PHYS942

Crystal Symmetries; Groups of Linear Transformations; Abstract Groups; Theory of Group Representations; Group of the Schrödinger Equation; Selection Rule Theorem; Groups of Physical Interest; Rotation Operations; Double Valued Representations; Direct Products; Crystal Fields; Adiabatic Approximation; Bloch's Theorem; The Effective Mass Expansion; Spin-Orbit Interaction; Time-Reversal Symmetry; Symmetry Properties of Wave Vectors; Band Theory; Impurities in Semiconductors.

TEXTBOOK

Heine, V. *Group Theory in Quantum Mechanics.* Pergamon, 1960.

RECOMMENDED READING

Kittel, C. *Quantum Theory of Solids.* Wiley, 1964.
Tinkham, M. *Group Theory and Quantum Mechanics.* McGraw-Hill, 1964.
Wigner, E.P. *Group Theory and its Application to the Quantum Mechanics of Atomic Spectra.* Academic, 1959.

PHYS955 MATHEMATICAL METHODS FOR PHYSICISTS B

42 hrs lectures.
Pre-requisite, Co-requisite and Assessment: To be determined by the Departmental Chairman

Special Functions; Green's Functions; Co-variant and Contravariant Tensors; Hilbert Space; Integral Equations.

TEXTBOOK

To be determined after consultation with the Departmental Chairman.

PHYS960 ADVANCED PROJECT IN PHYSICS B

Second session subject
42 hrs laboratory
Assessment: This will be based on the satisfactory operation of the completed experiments and the adequacy of the written descriptions of the experiments

The student will be required to design and construct several self-contained experiments at the level of those encountered in PHYS309 Advanced Experimental Physics. The number and type shall be determined by two members of the academic staff of the Department of Physics.

PHYS970 THE PHYSICS OF MEASUREMENTS

Double session subject
42 hrs lectures
Pre-requisite: PHYS309 Advanced Experimental Physics
Assessment: As for PHYS942

A course dealing with the design of experiments and the physical principles underlying the techniques of measurement for specific physical quantities and the general principles of instrument design.

Aims of Good Design; Replication; Randomization; Blocking, Latin Squares; Instrumental Profile; Optical Transfer Function; Noise Limitations; Integrator; The Phase Sensitive Detector; The Box Car Detector; The Correlator; The Matched Filter; Resistors; Galvanometers; Electrometers; Q-meters; Mass Measurement; Volume Measurement; Density Measurement; Pressure Measurement; Time Interval Measurement; Measurement of Small Displacements; Measurement of Large Displacements; Measurement of Angles; Coherence; Classification of Interferometers; Light Sources; Commonly Used Interferometers; Fourier Spectrometry; Detection of Interference Patterns; Interference Filters.

PHYS990 PLASMA PHYSICS

Double session subject
42 hrs lectures
Pre-requisite: Statistical Mechanics part of PHYS311; PHYS401 Theoretical Mechanics and Electromagnetism
Assessment: As for PHYS942

Review of Maxwell's Equations; Fourier Analysis of Maxwell's Equations; Motion of a Charged Particle in Electromagnetic Fields; Dynamics of Many-Particle Systems; The Boltzmann-Vlasov Equation; Magnetohydrodynamics; Alfen Waves; Chew, Goldberger, Low Approximation; Plasma Oscillations.

TEXTBOOK

Gartenhaus, S. *Elements of Plasma Physics.* Holt, Rinehart and Winston, 1964.

RECOMMENDED READING

Chandrasekhar, S. *Plasma Physics.* University of Chicago, 1960.
Longmire, C.L. *Elementary Plasma Physics.* Interscience (Wiley), 1963.
Thompson, W.B. *An Introduction to Plasma Physics.* Pergamon, 1962.

PHYS999 MAJOR THESIS

Double session subject, 48 credit points

1 METALLURGY
METALLURGY & BIOLOGY

2 FOUNDRY

3 CIVIL ENGINEERING
CIVIL ENGINEERING

4 ENGINEERING
ELECTRICAL ENGINEERING
MECHANICAL ENGINEERING

5 GARDENERS

6 WORKSHOPS

7 THERMODYNAMICS LABORATORY

8 ADMINISTRATION

9 HUT
COUNSELLING CENTRE PHILOSOPHY

10 SPORTS HUT

11 UNION

12 A.C.S. ANNEXE
BIOLOGY & FRENCH

13 SPORTS PAVILION

14 LECTURE THEATRE

15 A.C.S.
COMPUTER CENTRE ENGLISH
GENERAL STUDIES GEOLOGY
HISTORY MATHEMATICS

16 LIBRARY

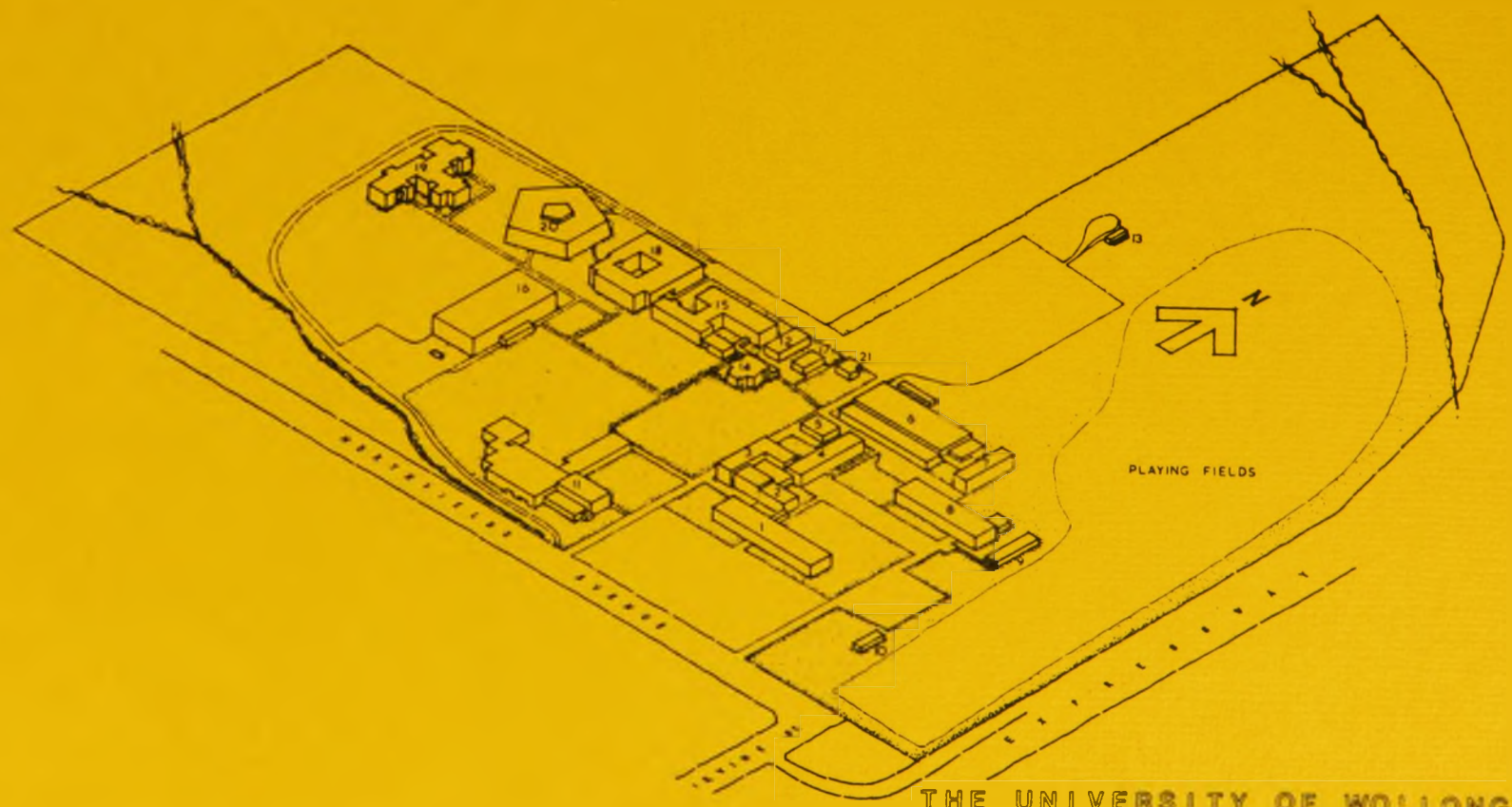
17 LECTURE THEATRE ANNEXE

18 SCIENCE
CHEMISTRY & PHYSICS

19 SOCIAL SCIENCE
ACCOUNTANCY ECONOMICS EDUCATION
GEOGRAPHY H.P.S. PSYCHOLOGY
SOCIOLOGY

20 PENTAGON
LECTURE THEATRES

21 EDUCATION LIAISON UNIT
N.S.W. DEPARTMENT OF EDUCATION



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